Barr's Buffon.

Buffon's Natural Hiſtory.

CONTAINING

A THEORY OF THE EARTH,

A GENERAL

HISTORY OF MAN,

OF THE BRUTE CREATION, AND OF

VEGETABLES, MINERALS,

&c. &c.

FROM THE FRENCH.

WITH NOTES BY THE TRANSLATOR.

IN TEN VOLUMES.

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1797.

BRITISH MUSEUM

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Of Carnivorous Animals.

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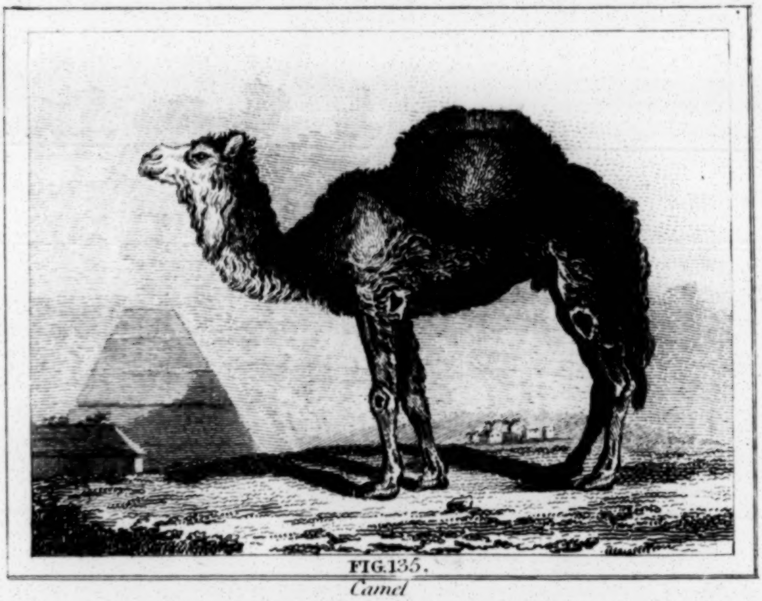

FIG. 135.

Camel

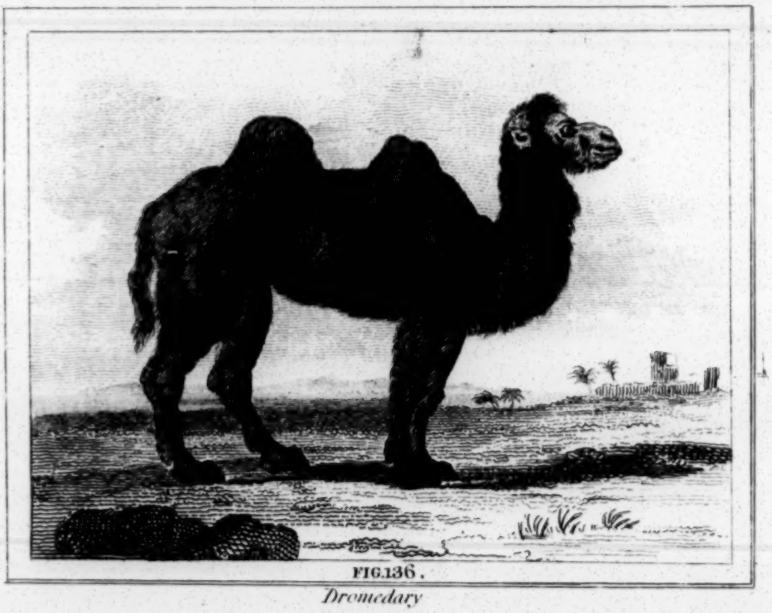

FIG. 136.

Dromedary

BUFFON'S

NATURAL HISTORY.

OF CARNIVOROUS ANIMALS.

THE CAMEL AND THE DROMEDARY.

THESE two names do not include two different ſpecies, but only two diſtinct races, ſubſiſting from time immemorial in the camel ſpecies. The principal, and perhaps the only perceptible character by which they differ, conſiſts in the camel's bearing two hunches on the back, and the dromedary only one, who is alſo leſs, and not ſo ſtrong as the camel; but both of them herd and intermix together, and the production from this croſs breed is more vigorous, and of greater value, than the others, Theſe mongrels form a ſecondary race, which mix and multiply among themſelves, and with the firſt race; ſo that in this ſpecies, as well as in that of other domeſtic animals, there are many varieties, the moſt general of which are relative to the difference of climate. Ariſtotle has judiciouſly marked the two principal races; the firſt, which has two hunches, under the name of the *Bactrian Camel*; and the ſecond under that of the *Arabian Camel*; the firſt are called *Turkiſh* and the others *Arabian Camels*. This diſtinction ſtill ſubſiſts, but it appears, ſince the diſcovery of thoſe parts of Africa and Aſia which were unknown to the ancients, that the dromedary is, without compariſon, more numerous and more univerſal than the camel: the laſt being ſeldom found in any other place than Turkeſtan, and ſome other parts of the Levant; while the dromedary is more common than any other beaſt of burthen in Arabia, and in all the northern parts of Africa, from the Mediterranean to the Black Sea; and is alſo met with in Egypt, in Perſia, in South Tartary, and in all the northern parts of Italy. The dromedary, therefore, occupies an immenſe tract of land, while the camel is confined to narrow limits. The firſt inhabits hot and parched regions; the ſecond, a more moiſt ſoil and temperate climate; and the whole ſpecies, as well the one as the other, appears to be confined to a zone of three or four hundred leagues in breadth, which ſpreads from Mauritania to China: for they ſubſiſt not either above or below this zone; and although a native of warm climates, this animal is averſe to thoſe where the heat is exceſſive; his ſpecies ends where that of the elephant begins, and it cannot exiſt either under the burning heat of the torrid zone, or in the milder climates of the temperate. It appears to be originally a native of Arabia; for that is not only the country where there are the greateſt number, but where they ſeem to be in the beſt condition. Arabia is the moſt dry country in the world, and where water is very ſcarce. The camel is the leaſt thirſty of all animals, and can paſs ſeveral days without any drink. The land is almoſt in every part dry and ſandy. The feet of the camel are formed to travel in ſand; and he cannot ſupport himſelf on moiſt and ſlippery ground. Herbage and paſture are wanting to this country, as is alſo the ox, whoſe place is ſupplied by the camel.

We cannot be deceived as to the native country of theſe animals, when we conſider their nature and ſtructure which muſt be conformable thereto; eſpecially when thoſe are not modified by the influence of other climates. It has been tried, but without effect, to multiply camels in Spain; they have alſo in vain been tranſported to America, but they have neither ſucceeded in the one climate, nor in the other, and they are ſeldom to be met with in the Eaſt Indies beyond Surat and Ormus: not that we mean to ſay abſolutely that they cannot ſubſiſt and increaſe in the East Indies, Spain, America, and even in colder countries, as in France, Holland, England, &c. By keeping them during the winter in warm ſtables, feeding and treating them with care, not letting them labour, or ſuffering them to walk out but when the weather is fine, they might be kept alive, and we might even hope to ſee them multiply; but ſuch productions are ſmall and poor, and the parents themſelves are weak and languid. They loſe, therefore, all their value in theſe climates; and, inſtead of being uſeful, they are very expenſive to bring up, while in their native country they may be ſaid to compoſe all the wealth of their maſters.

The Arabs regard the camel as a preſent from Heaven, a ſacred animal, without whoſe aid they could neither ſubſiſt, trade, nor travel. The milk of theſe beaſts is their common nouriſhment:

riſhment: they likewiſe eat their fleſh, eſpecially that of the young ones, which they reckon very good. The hair of theſe animals, which is fine and ſoft, and is renewed every year, ſerves them to make ſtuffs for their cloathing and their furniture. Bleſt with their camels, they not only want for nothing, but they even fear nothing. In a ſingle day they can traverſe a tract of fifty leagues into the deſart, and ſo be out of the reach of their enemies. All the armies in the world would periſh in purſuit of a troop of Arabs; ſo that they are no further ſubmiſſive than they pleaſe. Let any one figure to himſelf a country without verdure, and without water; a burning ſun, a ſky always clear, plains covered with ſand, and mountains ſtill more parched, over which the eye extends and the ſight is loſt, without being ſtopped by a ſingle living object; a dead earth conſtantly whirled about by the winds, preſenting nothing but bones, flints ſcattered here and there, rocks perpendicular, or overthrown; a deſart entirely naked, where the traveller never drew his breath under a friendly ſhade, where nothing accompanies him, and where nothing reminds him of an animated nature; an abſolute ſolitude, a thouſand times more frightful than that of the deepeſt foreſts; for trees appear as beings to the man, who thus deſolate, thus naked, and thus loſt, in an unbounded void, looks over all the extended ſpace as his tomb : the light of the day, more diſmal than the ſhade of the night, ſerves but to renew the idea of his own wretchedneſs and impotencies, and to preſent before his eyes the horror of his ſituation, by extending round him the immenſe abyſs which ſeparates him from the habitable parts of the earth; an immenſity which he, in vain, attempts to over-run ; for hunger, thirſt, and burning heat, haunt every weary moment that remains between deſpair and death.

Neverthelesſs, the Arab has found means to ſurmount theſe difficulties, and even to appropriate to himſelf theſe frightful gaps of Nature: they ſerve him for an aſylum, they ſecure his repoſe, and maintain his independence.—But why does not man know how to make uſe of any thing without abuſe ? The ſame free, independent, tranquil, and even rich Arab, inſtead of reſpecting theſe deſarts as the ramparts of his liberty, ſoils them with his guilt ; he traverſes them to rob the neighbouring nations of their ſlaves and gold; he makes uſe of them to exerciſe his robberies, which unfortunately he enjoys more at his liberty ; for his enterprizes are almoſt always ſucceſsful. Notwithſtanding the caution of his neighbours, and the ſuperiority of their forces, he eſcapes their purſuit, and unpuniſhed, bears away all that he has plundered them of.

An Arab, who deſtines himſelf to this buſineſs of land piracy, early hardens himſelf to the fatigue of travelling; he accuſtoms himſelf to the want of ſleep, to ſuffer hunger, thirſt, and heat. For the ſame purpoſe he inſtructs his camels, he brings them up, and exerciſes them in the ſame method. A few days after their birth, he bends their legs under their bellies, forces them to remain on the earth, and in this ſituation loads them with a heavy weight, and which he only relieves them from to put on greater. Inſtead of ſuffering them to feed at pleaſure, and to drink when they are thirſty, he regulates their repaſts, and by degrees increaſes them to greater diſtances between each meal, diminiſhing alſo, at the ſame time, the quantity of their food. When they are tolerably ſtrong, he exerciſes them to the courſe; he excites their emulation by the example of horſes, and by degrees renders them as ſwiſt, and more robuſt. At length, when he is aſſured of the ſtrength and ſwiftneſs of his camels, and that they can endure hunger and thirſt, he then loads them with whatever is neceſſary for his and their ſubſiſtence, departs with them, arrives unexpected at the borders of the deſart, ſtops the firſt paſſenger he ſees, pillages the ſtraggling habitations, loads his camels with his booty, and if he is purſued, he is obliged to expedite his retreat, and in which he diſplays all his own, and his animals' talents. Mounted on one of his ſwifteſt camels, he conducts the troop, makes them travel day and night, almoſt without ſtopping either to eat or drink ; and in this manner, he eaſily paſſes over the ſpace of three hundred leagues in eight days ; and during all that time of fatigue and travel, he never unloads his camels, and only allows them an hour of repoſe, and a ball of paſte each day. They often run in this manner for eight or nine days without meeting with any water, and when, by chance, there is a pool at ſome diſtance, they ſmell the water at more than half a league before they come to it. Thirſt makes them redouble their pace, and then they drink enough for all the time paſt, and for as long to come ; for they often travel many weeks, and their abſtinence endures as long as they are upon their journey.

In Turkey, Perſia, Egypt, Arabia, Barbary, &c. all their merchandize is carried by camels, which of all conveyances is the moſt ready and cheapeſt. Merchants and other travellers aſſemble themſelves in caravans to avoid the inſults and robberies of the Arabs. Theſe caravans are often very numerous, and always compoſed of more camels than men. Each camel is loaded according to his ſtrength, and when overloaded he refuſes to proceed, but remains in his reſting poſture till his burthen is lightened.

Large camels generally carry 1000, or even 1200lbs. weight, and the ſmaller 6 or 700. In theſe commercial journies, they do not travel quick, and as the rout is often ſeven or eight hundred leagues, they regulate their motions and journies; they only walk, and go every day ten or twelve leagues; they are unloaded every evening, and are ſuffered to feed at liberty. In a country where there is plenty of paſture, they eat enough in one hour to ruminate the whole night, and to ſerve them twenty-four; but they ſeldom meet with ſuch paſtures, and this delicate food is not neceſſary for them. They even ſeem to prefer wormwood, thiſtles, nettles, furze, and other thorny vegetables to the ſofteſt herbs; and as long as they can find plants to brouze on, they eaſily diſpenſe with drink.

Beſides, this facility with which they abſtain ſo long from drink, is not pure habit, but rather an effect of their formation. Independent of the four ſtomachs, which are common to ruminating animals, the camel is poſſeſſed of a fifth bag, which ſerves him as a reſervoir to retain the water. This fifth ſtomach is peculiar to the camel; it is ſo large as to contain a great quantity of water, where it remains without corrupting, or the other aliments being able to mix therewith. When the animal is preſſed with thirſt, or has occaſion to macerate his dry food for ruminating, he cauſes a part of this water to re-aſcend into the paunch, and even into the œſophagus, by a ſimple contraction of the muſcles. It is, therefore, by virtue of this ſingular conformation, that the camel can remain ſeveral days without drink, and that he can take at one time a prodigious quantity of water, which continues pure and limpid in this reſervoir, by reaſon that the liquors of the body, nor the juices of digeſtion are not able to mix with it.

If we compare the deformities, or rather the non-conformities of the camel with other quadrupeds, we cannot doubt but his nature has been conſiderably altered by conſtraint, ſlavery, and continual labour. The camel is the moſt compleatly, and laboriouſly enſlaved of all animals: the moſt compleatly, becauſe in the other ſpecies of domeſtic animals, ſuch as the horſe, the dog, the ox, the ſheep, the hog, &c. we find ſome individuals in their natural ſtate, which have not yet been ſubjected by man; but the whole ſpecies of the camel is enſlaved, and not any of them are to be found in their primitive ſtate of independence and liberty; in ſhort, he is the moſt laborious ſlave, becauſe he has never been trained, either for ſhew, as are many horſes, or for amuſement, as are almoſt all dogs, or for the uſe of the table, as are the ox, the hog, the ſheep, &c. He is the only beaſt of burden whom man has not harneſſed, or taught to draw, but whoſe body is looked upon as a living carriage, which may be loaded and oppreſſed, even during his time of reſt; for when in haſte he ſleeps under the preſſure of a heavy burden, his legs bent under him, and the weight of his body reſting upon his ſtomach. This animal always bears the marks of ſlavery and pain. Below the breaſt, upon the ſternum, there is a large calloſity, as tough as horn, and ſimilar ones upon the joints of his legs; although theſe calloſities are to be met with on every camel, yet they plainly prove they are not natural, but produced by exceſſive conſtraint and pain, from being often found filled with pus. The breaſt and legs, therefore, are deformed by theſe calloſities: the back is alſo disfigured with a double or ſingle hunch, and both theſe hunches and calloſities are perpetuated by generation. As it is evident, that the firſt deformity proceeds from the cuſtom of forcing them when quite young to lay on their ſtomachs, with their legs bent under them, and in that cramped poſture, to bear not only the weight of their bodies, but alſo the burthens which are put upon them; it muſt be preſumed, that the hunch or hunches, owe their origin to the unequal compreſſion of heavy burthens, which may have raiſed the fleſh, and puffed up the fat and ſkin; for theſe hunches are not bony, but compoſed of a fleſhy ſubſtance, partly of the ſame conſiſtence as the udder of a cow. Thus the calloſities and the hunches ſhould be equally regarded as deformities produced by the continuance of labour, and conſtraint of body; and though at firſt accidental and individual, are now become general and permanent in the whole ſpecies. It may alſo be preſumed, that the bag which contains the water, and which is only an appendix to the paunch, has been produced by a forced extenſion of this viſcus. The animal after enduring thirſt for a long time by taking at one time as much, and, perhaps, more water than the ſtomach could contain, this membrane would become extended and dilated, as has been obſerved in the ſtomach of ſheep, which extends and acquires a capacity in proportion to the quantity of its aliment. The ſtomach is very ſmall in ſheep that are fed with grain, while it becomes very large in thoſe that are fed with herbage.

Theſe conjectures would be fully confirmed, or deſtroyed, if any of theſe animals could be found wild to compare with the domeſtic; but theſe animals do not exiſt any where in a natural ſtate, or if they do, no one has yet remarked or deſcribed them; we muſt, therefore, ſuppoſe, that all which is good and fair about them they owe to Nature, and that all that is defective and deformed is occaſioned by the labour and ſlavery impoſed on them by the empire of man. Theſe poor animals muſt ſuffer a great deal, as they make lamentable cries, eſpecially when overloaded; but, notwithſtanding they are continually oppreſſed, they have as much ſpirit as docility. At the firſt ſign they bend their legs, and kneel upon the ground, to be loaded, thus ſaving the trouble of lifting up the burden to any great height. As ſoon as they are loaded they raiſe themſelves up again without any aſſiſtance, and the conductor, mounted on one of them, precedes the whole troop, who follow in the ſame pace as he leads. They want neither whip nor ſpur, but when they begin to be fatigued their conductors ſupport their ſpirits, or rather charm their wearineſs, by a ſong, or the ſound of ſome inſtrument. When they want to prolong the day's journey they give the animals but one hour's reſt, after which, renewing their ſong, they proceed on their way for ſeveral hours more, and the ſinging continues until they come to another reſting place; then the camels again kneel down, and are eaſed of their loads, by the cords being untied, and the bales rolling down on each ſide. In this cramped poſture, with their bellies couching upon the earth, they ſleep in the midſt of their baggage, which is tied on again the next morning with as much readineſs and facility as it was untied before they went to reſt.

The calloſities and tumours on their breaſt and legs, the bruiſes and wounds of the ſkin, the entire ſhedding their hair, the hunger, thirſt, and leanneſs of theſe animals are not their only inconveniencies; they are prepared for all theſe evils by one ſtill greater, namely, caſtration. They leave but one male for eight or ten females, and all the labouring camels are commonly geldings; they are weaker without doubt than thoſe which are not mutilated, but they are more tractable, and ready for employ at all times; while the others are not only ungovernable but even furious, in the rutting time, which remains forty days, and returns every ſpring; when, it is affirmed, they continually foam, and one or two red veſicles, as large as a hog's bladder, iſſue from their mouths. At this time they eat very little, attack and bite animals, and even their maſters, to whom at other times they are very ſubmiſſive.

The camel does not copulate like other quadrupeds, for the female ſinks upon her knees and receives the male in the ſame ſituation as ſhe reſts, ſleeps, or is loaded. This poſture, to which they are eaſily accuſtomed, becomes natural to them, ſince they aſſume it at the time of their copulation. The female goes about twelve months with young, and, like all large quadrupeds, produces but one at a birth: they have great plenty of milk, which is thick and nouriſhing, even for the human ſpecies, when mixed with a great quantity of water.

The females ſeldom do any labour when with young, but are ſuffered to bring forth at liberty. The advantages derived from their produce, and their milk, perhaps ſurpaſſes that which would be gained by their labour; nevertheleſs, in ſome places a great part of the females undergo caſtration, in order to render them more fit for labour; and it is pretended, that this operation, inſtead of diminiſhing augments their ſtrength and vigour, and adds to the beauty of their appearance. In general the fatter camels are, the more capable they are of enduring great fatigue. Their hunches appear to be formed from the ſuperabundance of nouriſhment, for in long journies, where they are ſtinted in their food, and where they ſuffer both hunger and thirſt, theſe hunches gradually diminiſh, and are reduced ſo flat that their places are only diſcovered by the length of the hair, which is always longer on theſe parts than on the reſt of the back; the leanneſs of the body increaſes in proportion as the hunches diminiſh. The Moors, who tranſport all their merchandize from Barbary and from Numidia into Ethiopia, depart with their camels well loaded, and then very fat and vigorous, but bring the ſame animals back ſo lean that they commonly ſell them at a low price to the Arabs of the deſart, who fatten them anew.

The ancients have ſaid, that theſe animals are in a condition for generation at the age of three years: this appears to me rather doubtful, for at that age they have not attained half their growth. The genital member of the male, like that of the bull, is very long and ſlender; it tends forward during copulation, like that of every other animal; but in its uſual ſtate, it is bent backwards, and voids the urine between the legs, ſo that the male and female urine in the ſame manner. The young camel ſucks its mother twelve months, and when deſigned for labour, to make him ſtrong and robuſt they leave him at liberty to ſuck or graze for a longer time, nor begin to load or put him to work till he has attained the age of four years. The camel commonly lives forty or fifty years, which term of life is proportioned to the time of his growth. It is without any foundation that ſome authors have advanced that he lives an hundred years.

By uniting under one point of view all the qualities of this animal, and all the advantages which are gained by him, he muſt be acknowledged to be the moſt uſeful of all the creatures under ſubordination to man. Gold and ſilk are not the true riches of the eaſt, the camel is the treaſure of Aſia. He is of greater value than the elephant, as he does as much labour, and conſumes not a twentieth part of the food. Beſides, the whole ſpecies is ſubjected to man, who propagates and multiplies it as much as he pleaſes. But it is not ſo with the elephants, whom he cannot multiply, can only ſubdue them individually, and that with great trouble and difficulty. The camel is not only of greater value than the elephant, but perhaps not of leſs than the horſe, the aſs, and the ox, when all their advantages are united. He carries as much as two mules, and not only eats leſs, but feeds on herbs as coarſe as the aſs. The female furniſhes milk longer than the cow; the fleſh of young camels is as good and wholeſome as veal; their hair is finer, and more ſought after than the beſt wool. Even their excrements are uſeful, for ſal ammonia is made of their urine, and their dung, when dried and powdered, ſerves them for litter, as well as for the horſes, with whom they often travel in countries where neither ſtraw nor hay is known. To conclude, they alſo make excellent fewel of this dung, which burns freely, gives a flame as clear, and almoſt as lively, as that of dry wood, and which is of great uſe in the deſarts, where not a tree is to be ſeen, and where, from the deficiency of combuſtible matter, fire is almoſt as ſcarce as water.

THE BUFFALO, THE BONASUS, THE AUROCHS, THE BISON, AND THE ZEBU.

ALTHOUGH the Buffalo is now common in Greece, and tame in Italy, it was known by neither the ancient Greeks or Romans; for he never had a name in the language of theſe people. The word *buffalo*, even indicates a foreign origin, not derived either from the Greek or Latin tongues. In effect, this animal is originally a native of the warmeſt climates of Africa and India, and was not tranſported and naturalized in Italy, till towards the ſeventh century. The moderns very improperly apply the name of *bubalus* to this animal, which indeed implies an African animal, but very different from the buffalo, as it is eaſy to demonſtrate,

ſtrate, by many paſſages of ancient authors. If we would place the bubalus to any particular genus, it rather belongs to that of the antelope, than to that of the ox. Belon having ſeen a ſmall hunched ox at Cairo, which differed from the buffalo and common ox, imagined it might be the bubalus of the ancients: but if he had carefully compared the characters of the bubalus, given by the ancients, with thoſe of this ſmall ox, he would have diſcovered his error; beſides, we can ſpeak of it with certainty, for we have ſeen this ſmall hunched ox alive, and having compared the deſcription we have given of it with that of Belon, we can have no doubt of its being the ſame animal. It was ſhewn at the fair at Paris in 1752, under the name of the *zebu*; which we have adopted to deſcribe this animal by, for it is a particular breed of the ox, and not a ſpecies of the buffalo or bubalus.

Ariſtotle, ſpeaking of the ox, only mentions the common ox, except ſaying, that among the Arachotas in India, there are wild oxen, which differ from the domeſtic ones as much as wild boars differ from hogs. In another part, he gives the deſcription of a wild ox of Pæonia, a province adjoining to Macedonia, which he calls *bonaſus*. Thus the common ox and the bonaſus, are the only animals of this kind taken notice of by Ariſtotle; and what muſt appear ſingular, the bonaſus, although fully deſcribed by this great philoſopher, has not been recognized by any of the Greek or Latin naturaliſts who have written after him, all of whom have literally copied him on this ſubject; ſo that to this day, there is no more than the name of bonaſus known, without the knowledge of the animal to whom it ought to be applied. If we conſider, that Ariſtotle, in ſpeaking of the wild oxen of temperate climates, has only mentioned the bonaſus; and that, on the contrary, the Greek and Latin authors of ſucceeding ages, have not ſpoken of the bonaſus, but deſcribe theſe wild oxen by the names of *urus* and *biſon*, we ſhall be led to believe, that the bonaſus muſt be either the one or the other of theſe animals; indeed by comparing what Ariſtotle has ſaid of the bonaſus, with what we know of the biſon, it is more than probable, theſe two names include the ſame animal. Julius Cæſar is the firſt who mentions the urus. Pliny and Pauſanias are alſo the firſt who ſpeak of the biſon. Since Pliny's time, the name of *bubalus* has been given indiſcriminately to the urus, or the biſon, and this confuſion has but increaſed with the time. To the bonaſus, bubalus, urus, and biſon, have been added, the *catopleba*, the *thur*, the *bubalus* of Belon, the biſons of Scotland and America, and all our naturaliſts have made as many different ſpecies as they have found names. The truth is here ſo obſcured by clouds, and ſo ſurrounded with errors, that it will be difficult to clear up this part of Natural Hiſtory, which the contradiction of reports, the variety of deſcriptions, the multiplicity of names, the diverſity of places, the difference of languages, and the obſcurity of the times, ſeems to have condemned to perpetual darkneſs.

I ſhall, therefore, give my opinion upon this ſubject, and afterwards preſent the proofs upon which it is founded.

1. The animal at preſent called *buffalo (fig. 137.)* was not known to the ancients.

2. The buffalo, at preſent domeſtic in Europe, is the ſame as the tame or wild buffalo of India and Africa.

3. The *bubalus* of the Greeks and Romans, is neither the buffalo, nor the ſmall ox of Belon, but the animal that the gentlemen of the Academy of Sciences have deſcribed in treating of the *Barbary cow,* and which we call the *bubalus.*

4. The

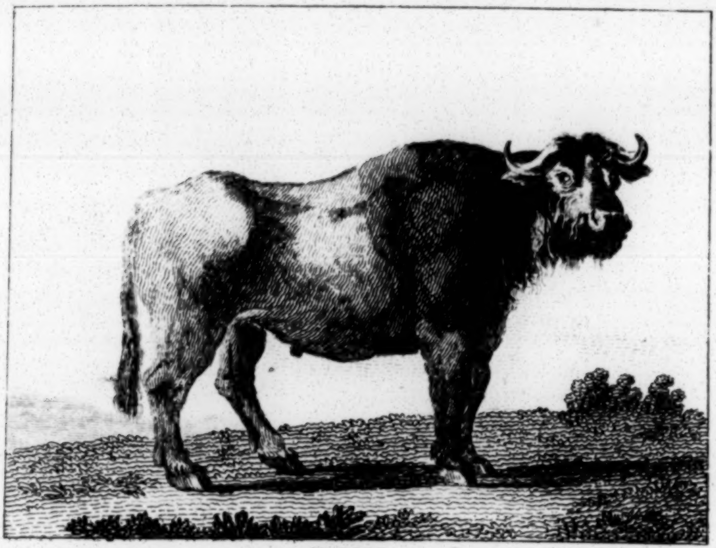

FIG.137

Buffalo

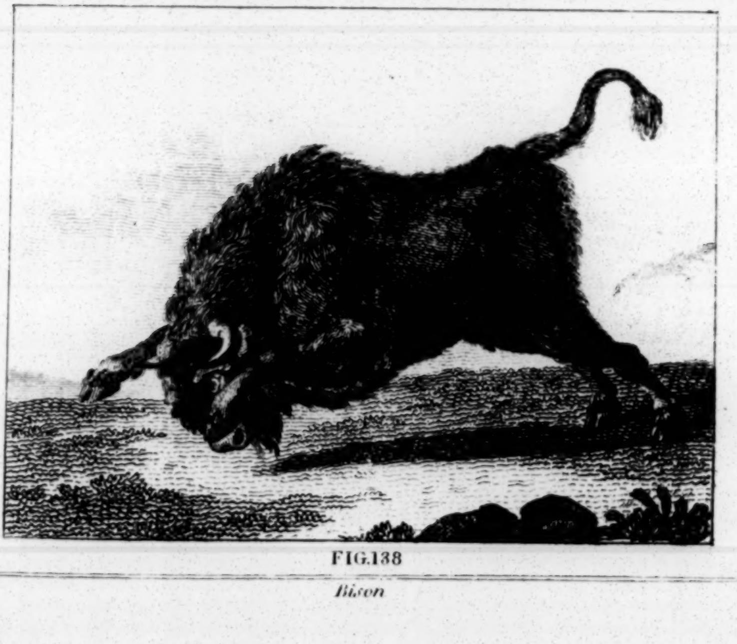

FIG.138

Bison

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4. The ſmall ox of Belon which we have ſeen, and call by the name of *zebu*, is no more than a variety in the ſpecies of the ox.

5. The *bonaſus* of Ariſtotle is the ſame animal, as the biſon *(fig. 138.)* of the Latins.

6. The *biſon* of America might originally come from the biſon of Europe.

7. The *urus*, or *aurochs*, is the ſame animal as our common bull, in his wild and natural ſtate.

8. The biſon only differs from the aurochs by accidental varieties, and conſequently he is, as well as the aurochs, of the ſame ſpecies as the domeſtic ox ; ſo that, it appears, all the denominations, and all the pretended ſpecies of the ancient and modern naturaliſts may be reduced to three ; namely, the ox, the buffalo, and the bubalus.

I do not doubt but ſome of the propoſitions I have laid down will appear mere aſſertions, particularly to thoſe who are employed with the nomenclature of animals, or have endeavoured to give a catalogue of them ; nevertheleſs, there is not one of theſe aſſertions but I am able to prove. But before I enter into critical diſcuſſions, each of which demand particular propoſitions, I ſhall explain the obſervations and facts which conducted me into this enquiry, and which have ſatisfied me, may alſo prove ſatisfactory to others.

Domeſtic animals in very few reſpects reſemble wild ones; their nature, their ſize, and their form, are leſs conſtant, and more ſubject to changes, eſpecially in the exterior parts of the body. The influence of climate, ſo powerful over all Nature, acts with more force upon captive animals, than upon free. Food prepared by the hand of man, oftentimes ſcantily given and ill choſen, joined to the inclemency of a foreign ſky, in time produces alterations ſufficiently deep to become conſtant, and be perpetuated from one generation to another. I do not pretend to ſay, that this general cauſe of alteration is ſo powerful as to eſſentially alter the nature of beings, whoſe conſtitution is ſo fixed as that of animals; but it changes them in certain reſpects, it diſguiſes and tranſforms them externally; it takes away from parts, and gives riſe to others; it paints them with various colours, and by its action upon the habit of the body, it has an influence on the diſpoſitions, inſtincts, and moſt interior qualities. A ſingle part changed in a compoſition ſo perfect as that of an animal body, is ſufficient to make the whole ſenſible of the alteration; and it is for this reaſon, that our domeſtic animals differ almoſt as much in diſpoſitions and inſtincts as in figure from thoſe who continue at large in their natural ſtate. Of this, the ſheep furniſhes a ſtriking example: this ſpecies, ſuch as it is at preſent, periſhes in a very ſhort time, if man ceaſes from tending it with care: it is alſo greatly changed, and very inferior to its original ſpecies. But to adhere to our preſent ſubject; we ſee what changes the ox has gone through, from the combined effects of climate, nouriſhment, and treatment, in a wild, and in a domeſtic ſtate.

The moſt general, and moſt remarkable variety in domeſtic and wild oxen, conſiſts in a hunch which ſome have between the ſhoulders: this race of oxen are called *biſons*, and it has been hitherto believed, that they were of a different ſpecies from the common ox; but as we are aſſured, that they produce together, and that the hunch diminiſhes in the firſt generation, and diſappears in the ſecond or third, it is evident, that this hunch is only a variable and accidental character, which does not prevent the biſon from belonging to the ſame ſpecies with the common ox. There were formerly in the deſart parts of Europe, wild oxen, ſome without hunches, and others with; thus the variety ſeems to be natural, and to proceed from the abundance and more ſubſtantial quality of food ; for we remarked, when treating of the camels, that when thoſe animals are lean, and badly fed, they have not even the appearance of a hunch. The ox without a hunch was named *vrochs*, and *turochs*, in the German tongue ; and the ox with a hunch, in the ſame language, was termed *viſen*. The Romans, who knew neither of theſe wild oxen before they ſaw them in Germany, adopted thoſe names ; of *vrochs*, they made *vrus* ; and of *viſen*, *biſon* ; and they never imagined that the wild ox deſcribed by Ariſtotle, under the name of *bonaſus*, could be one or other of theſe oxen, whoſe names they had thus latiniſed.

Another difference between the aurochs and the biſon is the length of the hair ; the neck, ſhoulders, and throat of the biſon are covered with very long hairs ; while the aurochs have all theſe parts covered with a ſhort hair, reſembling that of the reſt of the body, the front excepted, which has frizzled hair. But this difference of the hair is ſtill more accidental than that of the hunch, and, like that, depends on the food and climate, as we have already proved in the goats, ſheep, dogs, cats, &c. Thus, neither the hunch, nor the difference in the quantity of hair, are ſpecific characters, but merely ſimple and accidental variations.

A variety ſtill more extended, and to which naturaliſts have given more of character than it really deſerves, is the form of the horns; they have not conſidered that, in our domeſtic cattle, the ſhape, ſize, poſition, direction, and even number of horns, vary ſo ſtrongly, that it would be impoſſible to pronounce which is the true model of Nature. The horns of ſome cows are curved and bent downwards; others have them ſtrait, long, and elevated. There are whole races of ſheep, who have ſometimes two, ſometimes four horns, and there are breeds of cows who have no horns. Theſe exterior, or, as I may ſay, acceſſory parts of the body, are as little conſtant as the colours of the hair, which in domeſtic animals vary and combine in every manner. This difference in the ſhape and direction of the horns, which is ſo common, muſt not then be regarded as a character diſtinctive of the ſpecies; notwithſtanding, it is upon this character alone that our naturaliſts have eſtabliſhed their ſpecies; and, as Ariſtotle, in the deſcription he gives of the bonaſus, ſays, that its horns turn inwards, they have from that alone ſeparated it from all other oxen, and made it a particular ſpecies, and without having ever ſeen the individual. Upon this variation of the horns, in domeſtic animals, we have quoted cows and ewes, rather than bulls and rams, becauſe the females are more numerous than the males, and we may every where obſerve thirty cows or ewes for one bull or ram.

The mutilation of animals by caſtration ſeems to hurt the individual only, and not to affect the ſpecies; nevertheleſs, it is certain, that this cuſtom reſtrains Nature on one ſide and weakens it on the other. A ſingle male, condemned to ſerve thirty or forty females, muſt be exhauſted. The ardour of love muſt be unequal; indifferent in the male, who exceeds the deſigns of Nature, and too ardent in the female, who muſt be ſo limited; from thence all the productions muſt chiefly be tinctured with feminine qualities, a greater number of females will be produced than males; and even the males poſſeſs more of the mother than the father. This is, without doubt, the reaſon there are more girls than boys born in the countries where men have a great number of wives, while among thoſe where the men are permitted to have but one more males than females are born. It is true, that among domeſtic animals they commonly with-hold the moſt beautiful from caſtration, to become the parent of a numerous generation. The firſt productions of theſe choſen males will be ſtrong and vigorous; but from having too many copies from this ſingle mould the impreſſion of Nature is deformed, or at leaſt impaired, and not preſerved in its full perfection; the race muſt, therefore, be weakened and degenerate; and this, perhaps, is the cauſe why more monſters are to be found among domeſtic than wild animals, where the number of males, which concur to generation, is equal to that of the females. Moreover, when there is but one male to a great number of females they have not the liberty of conſulting their own taſte, and, conſequently, deprived of thoſe emotions which ariſe from ſpontaneous pleaſures. In the females there remains nothing poignant in their amours, and they languiſh in expecting the cold approaches of a male that is not of their own choice, who is frequently not accommodated to them, and from whom they do not receive thoſe flattering careſſes as if he was obliged to court a preference. From theſe ſluggiſh amours inſipid beings muſt proceed, who will have neither that courage, ſpirit, nor ſtrength, which Nature can only beſtow on every ſpecies by leaving to individuals their faculties quite entire, eſpecially the liberty of choice between the ſexes. It is well known, in the example of horſes, that the croſs breed is always the fineſt; we ought not, therefore, to confine our female cattle to a ſingle male of their own country, who already has too much the reſemblance of his mother, and who, conſequently, far from improving the ſpecies, can only continue to degrade it. Mankind, in this practice, have preferred their convenience to every other advantage; they have not endeavoured to ſupport, or to embelliſh Nature, but ſubmit to her operations that they may enjoy her productions in a more deſpotic manner. The males are the ſuperior of each ſpecies; they have the moſt ſpirit, and are the leaſt tractable, and, therefore, it is poſſibly thought neceſſary to check that which would be moſt ungovernable.

To theſe cauſes of degeneration in domeſtic animals we muſt yet mention one more, which alone has produced more changes than all the reſt put together, which is the tranſportation of animals from one climate to another; oxen, ſheep, and goats, have been carried to all parts; in every place they have felt the influence of the climate, and imbibed impreſſions from every ſoil and every ſky, ſo that nothing is more difficult than to recognize, in this great number of varieties, thoſe who are the leaſt eſtranged from the type of Nature.

Having thus explained the general cauſes of varieties among domeſtic animals, I ſhall proceed to the particular proofs of what I have advanced on the ſubject of oxen and buffaloes. I have ſaid, 1ſt. That the animal at preſent known by the name of the buffalo was not known by the ancients. This is evident, ſince none of their authors have deſcribed, or even uſed, a name which can be applied to it; beſides, we are informed, by the annals of Italy, that the firſt buffalo was brought there towards the end of the fifth century, A. D. 595.

2. The Buffalo, at preſent domeſtic in Europe, is the ſame as the wild or tame buffalo of India and Africa. This needs no other proof, than the compariſon of our deſcription of the buffalo, taken from an animal we ſaw alive, with the remarks that travellers have given of the buffaloes of Perſia, Mogul, Bengal, Egypt, Guinea, and the Cape of Good Hope. In all theſe countries this animal is the ſame, and does not differ from our buffalo but by very ſlight differences.

3. The Bubalus of the Greeks and Romans, is not the buffalo, nor the ſmall ox of Belon ; but the animal that the gentlemen of the Academy has deſcribed under the name of the cow of Barbary. This appears clear from Ariſtotle placing the bubalus with the ſtags and fallow deer, and not with the oxen. In other parts, he ſpeaks of him among the roebucks, and ſays, that he but badly defends himſelf with his horns, and that he flies from ferocious animals. Pliny, in ſpeaking of the wild oxen of Germany, ſays, that it is through ignorance that the common people give the name of bubalus to theſe oxen, for the bubalus is an animal of Africa, which in ſome meaſure reſembles a calf or a ſtag. The bubalus is then a timid animal, who has no other reſource than by flight to avoid the attack of ferocious animals, who conſequently from this circumſtance muſt be ſwift, and poſſeſs ſomething of a make between the calf and a ſtag : all theſe characters, not one of which apply to the buffalo, are found perfectly united in the figure of the animal, *Horatius Fontana* ſent to Aldrovandus, and of which the gentlemen of the Academy have given a figure and deſcription under the name of the *cow of Barbary* ;

Barbary; and they have thought, with me, that it was the bubalus of the ancients.

4. The ſmall ox of Belon is only a variety in the ſpecies of the ox. We ſhall eaſily prove this, by only referring to the figure of the animal given by Belon, Proſper Alpinus, Edwards, and to the deſcription we have made. We have ſeen it alive; his conductor told us, that he brought him from Africa, where he was called *Zebu*; that he was domeſtic; and that they uſed him to ride on. This animal is, in fact, very gentle and familiar; he is of an agreeable figure, though heavy and thick; nevertheleſs he ſo perfectly reſembles the ox, that I cannot give a more juſt idea of him, than by ſaying, if we were to look at a very handſome bull, through a glaſs that diminiſhes objects one half, the figure would very near approach that of the zebu.

5. The Bonaſus of Ariſtotle is the ſame as the biſon of the Latins. This propoſition cannot be proved, without a critical diſcuſſion, with the whole detail of which I ſhall not trouble the reader. Geſner, who was a learned man, as well as a naturaliſt, and who thought, with me, that the bonaſus might be the biſon, has more carefully than any other perſon examined and diſcuſſed the marks

which Ariſtotle gives to the baraſus, and at the ſame time has corrected many erroneous expreſſions in the tranſlation of Theodore Gaza, which nevertheleſs all the naturaliſts have followed in making uſe of, therefore, of his elucidations, and in ſuppreſſing from the remarks of Ariſtotle, whatever is obſcure, contradictory, or fabulous, they appear to me reduced to the following deſcription:

The bonaſus is a wild ox of Pœonia, and is at leaſt as big as a domeſtic ox, and of the ſame make; he is covered from the ſhoulders to the eyes with a long hair, like the mane of an horſe; his voice is like the ox; his horns are ſhort, and curved round the ears; his legs are covered with long hair, ſoft as wool, and his tail is ſmall to his ſize, although in other reſpects it reſembles that of the ox. Like the bull, he has the cuſtom of pawing the ground with his feet; his hide is hard, his fleſh is tender, and good. By theſe characters, which are all we can rely on from Ariſtotle, we ſee how near the bonaſus approaches towards the biſon. Every part, in fact, agrees, the ſhape of the horns excepted, but which, as we have already obſerved, greatly vary in animals, who are, notwithſtanding, of the ſame ſpecies. We have ſeen ſuch crooked horns taken from an hunched ox of Africa, and we ſhall hereafter prove, that this hunched ox is no other than the biſon. This we ſhall be able to confirm by the teſtimonies of ancients authors. Ariſtotle mentions the bonaſus as an ox of Pœonia; and Pauſanias, ſpeaking of the Pœonian bulls, ſays, in two different parts of his works, that theſe bulls are biſons; he even expreſsly ſays, that the bulls of Pœonia, which he ſaw at the public games at Rome, had very long hair upon the breaſt, and about the jaws. In ſhort, Julius Cæſar, Pliny, Pauſanias, Solinus, &c. in ſpeaking of wild oxen, mention the aurochs and the biſon, but take no notice of the bonaſus. It muſt, therefore, be ſuppoſed, that in leſs than four or five centuries the ſpecies of the bonaſus has been loſt, unleſs we allow that the names *bonaſus* and *biſon* indicate only the ſame animal.

6. The biſon of America might come originally from the biſon of Europe. We have already laid down the foundation of this opinion in our diſcourſe on the animals of the two continents; they are the reſult of the experience of M. de la Nux, who has given much information on this ſubject. He has informed us, that the biſons, or hunched oxen, of India and Africa, copulate with the bulls

and cows of Europe, and that the hunch is only an accidental character, which diminiſhes in the firſt generation, and diſappears in the ſecond or third. Since the biſons of India are of the ſame ſpecies as our oxen, and have, conſequently, the ſame origin, is it not natural to extend this origin to the biſon of America? Every thing ſeems to concur in ſupport of this ſuppoſition. The biſons appear to be originally of cold and temperate regions; their name is derived from the German language; the ancients ſay that they were found in that part of Germany which borders on Scythia; and there are now biſons in the north of Germany, in Poland, and in Scotland; they might, therefore, have paſſed into America, or come from thence, as they are animals common to the two continents. The only difference between the biſons of Europe and thoſe of America is, that the latter are leſs. But even this difference is a new preſumption that they are of the ſame ſpecies, for we have already remarked, that generally both domeſtic and wild animals, which have paſſed of themſelves, or have been tranſported, into America, have, without any exception, diminiſhed in ſize; beſides, all the characters, even the hunch, and the long hairs at the hinder parts, are the ſame in the biſons of America and in thoſe of Europe; thus we cannot refuſe to regard them, not only as animals of the ſame ſpecies but alſo of the ſame race.

7. The urus, or aurochs, is the ſame animal as the common bull, in his wild and natural ſtate. This poſition is clear, as the figure and conſtitution of the body of the aurochs is perfectly ſimilar to that of our domeſtic bull. The aurochs is only larger and ſtronger, like every other animal who enjoys his liberty. The aurochs are ſtill to be met with in ſome provinces of the north. The young aurochs have been taken from their mothers, and being reared, when of a proper age have copulated with the domeſtic bulls and cows, ſo that we cannot doubt but they are of the ſame ſpecies.

8. To conclude, The biſon differs from the aurochs by accidental varieties only, and, conſequently, is alſo of the ſame ſpecies as the domeſtic ox. The hunch, the length and quality of the hair, and the form of the horns, are the ſole characters by which we can diſtinguiſh the biſon from the aurochs. But we have known the hunched oxen produce with the domeſtic kind; we likewiſe know, that the length and quality of the hair, in all animals, depend on the nature of the climate; and we

have remarked, that in oxen, goats, and ſheep, the form of the horns frequently vary. Theſe differences, therefore, are not ſufficient to eſtabliſh two diſtinct ſpecies; and ſince our domeſtic oxen produce with the hunched oxen of India, we have reaſon to think they would copulate with the biſon, or hunched ox of Europe. There are, in the almoſt innumerable varieties of theſe animals, in different climates, two primitive kinds, both of which have long continued in a natural ſtate; the hunched ox, or biſon, and the aurochs, or ox without an hunch. Theſe kinds have ſubſiſted till this preſent time, either in a wild or domeſtic ſtate, and are ſcattered, or rather have been tranſported, into all the climates of the earth. All the domeſtic oxen without hunches have proceeded originally from the aurochs, and thoſe with the hunch from the biſon. To give a juſt idea of theſe varieties we ſhall make an enumeration of them as they are found in the different parts of the world.

To begin with the north of Europe; the bulls and cows of Iceland are deprived of horns, although they are of the ſame kind as our oxen. The ſize of theſe animals is rather relative to the plenty and quality of paſture than to the nature of the climate. The Dutch fetch lean cows from Denmark, which fatten prodigiouſly in their rich meadows, and give a great deal of milk: theſe Denmark cows are larger than ours. The bulls and cows of the Ukraine, where there is excellent paſture, are ſaid to be the biggeſt in Europe, and they are of the ſame kind as our oxen. In Switzerland, where the tops of the mountains are covered with an abundant and flouriſhing verdure, and which is ſolely reſerved for food for the cattle, the oxen are nearly double the ſize of thoſe in France, where commonly they are fed on the coarſeſt herbage, which is refuſed by horſes. Bad hay, and leaves, are the common food of our oxen in winter, and in ſpring, when they ſhould be refreſhed, they are excluded from the meadows; they, therefore, ſuffer ſtill more in that ſeaſon than in winter, for they then have little or nothing given them in the ſtable, but are driven into the roads, into fallow fields, or into the woods, and are always kept at a diſtance from the fertile lands, ſo that they are more fatigued than fed; at laſt, in ſummer, they are permitted to enter the meadows, which then are ſtripped, and parched with heat and drought; there is not, therefore, a ſingle ſeaſon throughout the year in which theſe animals are amply or agreeably fed. This is the ſole cauſe which renders them weak, poor, and ſmall ; for, in Spain, and in ſome cantons of the provinces of France, where there is good paſture, and ſolely reſerved for the oxen, they are much ſtronger and larger.

In Barbary, and moſt part of Africa, where the ground is dry, and the paſture poor, the oxen are ſtill ſmaller, the cows give much leſs milk than thoſe in France, and the greateſt part of them loſe their milk when their calves are taken from them. They are the ſame in ſome parts of Perſia, of Lower Ethiopia, and in Great Tartary, while in the ſame countries, and at very ſmall diſtances, as in Calmuck Tartary, in Upper Ethiopia, and in Abyſſinia, the oxen are a prodigious ſize. This difference, therefore, depends more on the plenty of their food than on the temperature of the climate. In the northern, temperate, and warm regions, we equally find, at very ſmall diſtances, ſmall or large oxen, according to the quantity and quality of the paſture they are fed upon.

The breed of aurochs, or ox without a hunch, inhabits the cold and temperate zones, and is not much diſperſed in the ſouthern countries. On the contrary, the breed of the biſon, or hunched ox, occupies all the ſouthern provinces. In the whole continent of India, in the eaſtern and ſouthern iſlands of all Africa, from Mount Atlas to the Cape of Good Hope, we find no others but hunched oxen; it even appears, that this breed, which has prevailed in all the warm countries, has many advantages over the others; for, like the biſon, of which they are the iſſue, they have the hair ſofter, and more gloſſy than our oxen, who, like the auroch, are furniſhed but with little hair, of a harſh nature. Theſe hunched oxen are alſo ſwifter, and more proper to ſupply the place of the horſe *; at the ſame time, they are leſs clumſy, ſtupid, and indolent than our oxen. They are more tractable, and ſenſible, have more of that intelligence which renders them uſeful; they are alſo treated with more care than our fineſt horſes. The regard the Indians have for theſe animals is ſo great that it has degenerated into ſuperſtition, the laſt mark of blind reſpect. The ox, as the moſt uſeful animal, has appeared to them the moſt worthy of being revered; and they have made an idol of the object of their veneration, a kind of beneficent and powerful divinity; for we are

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are deſirous of rendering all we reſpect, great, and capable of doing much good, or much harm.

Theſe hunched oxen vary perhaps more than ours in the colours of the hair, and the figure of their horns. The handſomeſt are all white, like the oxen of Lombardy. Some are deſtitute of horns, while others have them very much elevated, and others ſo bent down, that they are almoſt pendant. It even appears, that we muſt divide this firſt race of biſons, or hunched oxen, into two ſecondary kinds; the one large, and the other ſmall, and this laſt is that of the *zebu*. Both of them are found nearly in the ſame climates, and are equally mild and eaſily managed; both have ſoft hair, and a hunch upon the back; this hunch is nothing but an excreſcence, a kind of wen, a piece of tender fleſh, as good to eat as the tongue of an ox. The hunches of ſome oxen weigh from forty to fifty pounds, others have them much ſmaller. Some of theſe oxen have prodigious large horns; there is one in the French king's cabinet, which is three feet and a half in length, and ſeven inches in diameter at the baſe; many travellers affirm that they have ſeen them, of a capacity ſufficient to contain fifteen, and even twenty pints of water.

The method of caſtrating large cattle is not known in any part of Africa, and it is but little practiſed in India. When the bulls undergo this operation, it is not by cutting, but compreſſing their teſticles; and although the Indians keep a number of theſe animals to draw their carriages, and work in their grounds, they do not train up near ſo many as we do. As in all hot countries the cows give but little milk; as the natives are but little acquainted with cheeſe and butter; and as the fleſh of the calves is not ſo good as in Europe, they multiply the horned beaſts leſs than we do. Beſides, all thoſe ſouthern provinces of Africa and Aſia, being much leſs peopled than Europe, there are a great number of wild oxen, who are taken when young; theſe become tame of themſelves, and ſubmit to labour without any reſiſtance; they become ſo tractable, that they are managed with greater eaſe than horſes, the voice of their maſter is only requiſite to direct and make them obey; they are very careful of them in every reſpect, and give them plenty of the beſt food. Theſe animals, thus raiſed, appear to be of a different nature from our oxen, who only know us by our bad treatment; the goad, whip, and ſcarcity of food, render them ſtupid and weak: in ſhort, if we knew our own intereſt, we ſhould treat what is dependent on us with better uſage. Men of inferior rank, and people the leaſt poliſhed, ſeem to have a better ſenſe than other people of the laws of equality, and the variety of natural equality. The ſervant of a farmer may be ſaid to be upon a level with his maſter; the horſes of the Arabs, and the oxen of the Hottentots, are favourite domeſtics, companions in their exerciſes, aſſiſtants in their labour, and with whom they ſhare their habitation, their bed, and their tables. Man, by this community, debaſes himſelf leſs than the beaſts are elevated and humanized. They become affectionate, ſenſible, and intelligent; they there, through love, perform all that they do here through fear. They do more, for as their nature is raiſed by the gentleneſs of their education, and by the continuance of attention towards them, they become capable of actions almoſt human. The Hottentots bring up their oxen to war, and make uſe of them nearly in the ſame manner as the Indians do the elephants; they inſtruct theſe oxen to guard their ſheep, to conduct them from place to place, and to defend them from ſtrangers and ferocious beaſts; they teach them to know friends from enemies, to underſtand ſigns, and to obey the voice. Thus the moſt ſtupid of men are the beſt preceptors of beaſts.

All the ſouthern parts of Africa and Aſia are inhabited with biſons, or hunched oxen, among which is a great variety in reſpect to ſize, colour, ſhape of the horns, &c. On the contrary, all the northern countries of theſe two parts of the world, and the whole of Europe, comprehending the adjacent iſlands, as far as the Azores, have only oxen without hunches, who derive their origin from the aurochs; and as the aurochs, which is our ox in a wild ſtate, is larger and ſtronger than our domeſtic ones, ſo the biſon, or wild hunched ox, is alſo ſtronger and larger than the tame ox of India. He is alſo ſometimes ſmaller, but that depends only on the quantity of food. At Malabar, Abyſſinia, and Madagaſcar, where the meadows are naturally ſpacious and fertile, the biſons are of a prodigious ſize; in Africa and Arabia Petrea, where the land is dry, the zebus, or biſons, are of a ſmall ſize.

In every part of America oxen without hunches are generally diffuſed, which the Spaniards and other Europeans have ſucceſſively tranſported thither; theſe oxen have conſiderably multiplied, but are become leſs in theſe new countries. The ſpecies was abſolutely unknown in South America; but in all the northern parts, as far as Florida, Louiſiana, and even nearly to Mexico, the biſons, or hunched oxen, were found in great numbers. Theſe biſons, which formerly inhabited the woods of Germany, Scotland, and other northern countries, have probably paſſed from one continent to the other, and are become, like other animals, ſmaller in this new world; and as they lived in climates more or leſs cold, their hair became longer or ſhorter. Their beards and hair is longer at Hudſon's Bay than at Mexico, and in general their hair is ſofter than the fineſt wool. We cannot, therefore, avoid believing theſe biſons of the new continent are of the ſame ſpecies as thoſe of the old; they have preſerved all the principal characters, as the hunch upon the ſhoulders, the long hair under the muzzle, and on the hinder parts of the body, and the ſhort legs and tail; and by comparing what Hernandes, Fernandes, and every other hiſtorian and traveller of the new world have ſaid, with what has been written concerning the biſon of Europe, we ſhall be convinced, that theſe animals are not of a different ſpecies.

Thus the wild and domeſtic ox of Europe, Aſia, America, and Africa; the bonaſus, the aurochs, the biſon, and the zebu, are all animals of the ſame ſpecies, which according to the differences of climate, food, and treatment, have undergone all the variations we have explained. The ox is the moſt uſeful animal, and alſo the moſt univerſally diſperſed; for, excepting South America, he has been found in all parts; his conſtitution being equally formed to withſtand the ardour of the ſouth, or rigours of the north. He appears to be ancient in every climate; he is domeſtic in civilized nations, and wild in deſart countries or among unpoliſhed people. He ſupports himſelf by his own reſources when in a ſtate of nature, and never loſes the qualities relative to the ſervice of man. The young wild calves, which are taken from their mothers in India or Africa, in a ſhort time become as tractable as thoſe of the domeſtic kind; and this natural conformity is another ſtriking proof of the identity of the ſpecies. The gentleneſs of character in theſe animals indicates the natural flexibility of their bodies; for in all ſpecies in which we have diſcovered the character of gentleneſs, and which have been ſubjected to a domeſtic ſtate, there are more varieties than can be found in thoſe which have remained wild through their character of inflexibility.

If it be aſked, whether the aurochs or the biſon be the primitive race of oxen? a ſatisfactory anſwer may be drawn from the facts we have juſt laid down. The hunch of the biſon is, as it has been obſerved, no more than an accidental character, which is defaced and loſt in the mixture of the two kinds. The aurochs, or ox without an hunch, is, then, the moſt powerful and predominant kind; if it was otherwiſe, the hunch, inſtead of diſappearing, would extend and remain upon every one of this mixt breed. Beſides, this hunch of the biſon, like that of the camel, is leſs the production of Nature than the effect of labour, and the mark of ſlavery. From time immemorial, in almoſt every quarter of the globe, the ox has been obliged to carry burdens; the habitual, and often exceſſive load, has deformed their backs; and this deformity has been afterwards propagated by generation. Undeformed oxen are no longer to be ſeen, but in thoſe countries where they have not made uſe of them as beaſts of burden. In all Africa, and the eaſtern continent, the oxen are hunched, occaſioned by their having always carried loads on their ſhoulders. In Europe, where they are only employed for draught, they have not undergone this deformed alteration, which in the firſt place probably proceeds from the compreſſion of the loads, and in the ſecond from the abundance of food; for it diſappears when the animal is lean and poorly fed. Some enſlaved and hunched oxen might have eſcaped or been abandoned in the woods, and where their poſterity would be loaded with the ſame deformity, which, far from diſappearing, may have encreaſed by the abundance of food peculiar to uncultivated countries, ſo that this ſecond breed would ſpread over all the deſart lands of the north and ſouth, and paſs into the New Continent, like other animals, whoſe nature can ſupport the cold. What ſtill more confirms the identity of the ſpecies of the biſon and aurochs, is, the biſons of North America have ſo ſtrong a ſmell, that they have been called *Muſk Oxen* by moſt travellers; and, at the ſame time, we find, by the accounts of many perſons, that the aurochs, or wild ox of Pruſſia and Livonia, has the ſame ſcent of muſk.

There remains, therefore, but two ſpecies, the buffalo and the ox, out of all the names placed at the head of this article, each of which the ancient and modern naturaliſts have treated as ſeparate and diſtinct. Theſe two animals, although greatly reſembling, both domeſtic, often living under the ſame roof, and fed in

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The height and thickneſs of the buffalo alone indicates, that he is a native of warm countries. The largeſt quadrupeds belong to the torrid zone of the Old Continent; and the buffalo, for his magnitude, ought to be placed next to the elephant, the rhinoceros, and the hippopotamus. The camel is taller but leſs thick, and alſo a native of the ſouthern countries of Africa and Aſia. Nevertheleſs, buffaloes live and multiply in Italy, in France, and in other temperate provinces. Thoſe kept in the royal menagerie, have brought forth two or three times; the female has but one at a birth, and goes with young about twelve months, which is another proof of the difference between this ſpecies and that of the cow, who only goes nine months. It appears alſo, that theſe animals are more gentle and leſs brutal in their native country, and the warmer the climate the more tractable is their nature. In Egypt they are more tractable than in Italy; and in India more ſo than in Egypt. Thoſe of Italy have alſo more hair than thoſe of Egypt, and thoſe of Egypt more than thoſe of India. Their coat is never entirely covered, becauſe they are natives of hot countries; and in general, large animals of theſe climates have little or no hair.

There are a great number of wild buffaloes in the countries of Africa and India, which frequent the banks of rivers, and large meadows. The wild buffaloes go in droves, and make great havock in cultivated lands; but they never attack the human ſpecies, unleſs they are wounded, and are then very dangerous; for they make directly at their enemy, throw him down, and trample him under their feet. They are, however, greatly terrified at the ſight of fire, and are diſpleaſed at a red colour. Aldrovandus, Kolbe, and many other naturaliſts and travellers, aſſure us, that no perſon dare wear red cloaths in the country where the buffaloes are. I do not know if this averſion to fire and a red colour is general among the buffaloes; for there are but few among our oxen who grow angry at the ſight of red cloaths.

The buffalo, like all large animals of warm climates, is fond of bathing, and even of remaining in the water; he ſwims well, and boldly traverſes the moſt rapid floods. As his legs are longer than thoſe of the ox, he runs alſo quicker. The Negroes of Guinea, and the Indians of Malabar, where the buffaloes are very numerous, often hunt them. They neither purſue nor attack them openly, but, climbing up the trees, or hiding themſelves in the thickets, which the buffaloes cannot penetrate, on account of their horns, they wait for and kill them. Thoſe people are fond of the fleſh of the buffalo, and gain great profit by vending their hides and horns, which are harder and better than thoſe of the ox.

The animal, called, at Congo, *Empacaſſa*, or *Pacaſſa*, though very badly deſcribed by travellers, ſeems to me to be the buffalo; and that which they have ſpoken of, under the name of *Empabunga*, or *Impalunca*, in the ſame country, may poſſibly be the bubalus, whoſe hiſtory we ſhall give with that of the antelope.

SUPPLEMENT.

M. DE QUERHOENT ſays, that altho' the biſons invariably differ from the common oxen by the hunch on their backs, and their hair being longer, yet they breed in the Iſle of France, and their fleſh is preferable to that of European oxen; their hair is alſo ſmoother, their legs thinner, and their horns are longer, and after ſome few generations the hunch entirely diſappears. There was one brought to Holland from North America, which was carried about to different towns, by a Swede, in a large cage; this one had an enormous mane round his head, which was not hair, but a very fine wool, divided into locks like a fleece; the ſkin was of a black colour, excepting on the hunch, where the hair was longer, and under that the ſkin was rather tawny, and to us this animal ſeemed to differ from the European by the hunch and wool only.

Biſons are ſaid to have exiſted formerly in the north of Europe, and Geſner aſſerts, that even in his time there were ſome in Scotland; but I have been credibly informed by letters, both from England and Scotland, that not the ſmalleſt remembrance of them can be traced in that country. Mr. Bell, in his travels from Ruſſia to China, mentions ſeeing two ſpecies of oxen in the northern parts of Aſia, one of which was the aurochs, and the other what we, after Gmelin, have called the Tartarian, or Grunting Cow, which ſeemed to be of the ſame ſpecies as the biſon; and in which we find, by compariſon, a perfect coincidence of characters, excepting the former grunts and the latter bellows.

Although the race of the biſons appear diffuſed in the old continent, from Madagaſcar and the point of Africa, and from the extent of the Eaſt Indies even to Siberia, and that though they are met with in the new continent, from the country of the Ilionois to Louiſiana and Mexico, they have never paſſed the iſthmus of Panama, for there are not any biſons in South America, notwithſtanding the climate is perfectly agreeable to their nature, and European oxen multiply there as well as in any other place.

The beſt bulls and cows at Madagaſcar were brought from Africa, and have a hunch on their backs; but the cows give very little milk. In this iſland there are wild biſons in the foreſts, the fleſh of which is not ſo good as that of our oxen. The natives ef Agra hunt them on the mountain of Nerwer, in the road from Surat to Golconda, and which is ſurrounded with wood.

The zebu, as we formerly obſerved, is the biſon as well as the ox in miniature, and though originally a native of warm regions, can nevertheleſs exiſt and multiply in temperate ones, for in a letter I received from Mr. Colinſon, dated London, December, 1764, he aſſures me, that the Dukes of Richmond and Portland had ſeveral of theſe animals in their parks, and which brought forth calves every year: they were originally brought from the

Eaſt-Indies. He adds, that the females were much larger than the males, but that the hunch on the back was twice as big on the latter as the former; that the young zebu ſucks the mother like other calves, but that in our climate the milk ſoon dries up, and that it is neceſſary to have another female to bring them up; that the Duke of Richmond ordered one of them to be killed, when its fleſh was found not to be near ſo good as that of the common ox.

There may alſo be ſmall oxen without the hunch, which, like the zebu, conſtitute a particular race; for Careri, in his journey from Iſpahan to Schiras, ſaw two ſmall cows, which had been ſent as a preſent to the king, that did not exceed the ſize of calves; they were fed entirely upon ſtraw, and yet were very fat.

As to the buffaloes, although they can make but little uſe of their horns, they are compelled to fight lions and tigers in the Mogul's country. Theſe animals are numerous in warm and marſhy countries, eſpecially near rivers, for water and a moiſt ſoil ſeems to be more neceſſary to them than a warm climate; there are not any of them therefore in Arabia, where the country is dry. They hunt the wild buffaloes, but with great caution, as they are very dangerous, and when wounded ruſh at their opponents with great fury.

M. de Querhoënt ſays, the body of the buffalo, at the Cape of Good Hope, is about the ſize of our oxen, but his head is larger, and his legs ſhorter. They generally keep about the edge of the woods; and as he has a bad ſight he keeps his head near the ground, and when he obſerves any diſagreeable object near him he makes a ſudden dart upon it, making at the ſame time a moſt hideous bellowing, and on thoſe occaſions it is difficult to eſcape him; but he is not ſo much to be feared in the open fields: his hair is commonly red, with a few black ſpots, and they are often ſeen together in large flocks.

THE ZEBU.

WE have already ſpoken of this little ox under the article buffalo; but as there has been one brought to the royal menagerie ſince the impreſſion of that article, we can now ſpeak of it with greater exactneſs, and give an engraving of it, done from life. I have alſo learned, by making new reſearches, that this ſmall ox, to which I have given the name of *Zebu*, *(fig.* 145.*)* is very probably the ſame animal which is called *Lant*, or *Dant*, in Numidia, and in ſome other northern provinces of Africa, where it is very common, and that the name *Dant*, which can belong to no other animal but this we are treating of, has been tranſported from Africa into America, and given to an animal which only reſembles this by the ſize of his body, and who belongs to a different ſpecies. This dant of America is the tapir, or the maipouri; and in order that it may not be confounded with the dant of Africa, which is our zebu, we ſhall give the hiſtory of it in this volume.

THE MUFLON, AND OTHER SHEEP.

THE weakeſt ſpecies of animals were rendered domeſtic the earlieſt of any. The ſheep and goat were ſubjugated before the horſe, the ox, or the camel. They were alſo tranſported from one climate to another with greater eaſe; hence the great variety which are to be met with in theſe ſpecies, and the difficulty of recognizing the original breed of each. It is certain, as we have proved, that our domeſtic ſheep, as they at preſent exiſt, could not ſupport themſelves without the aſſiſtance of man; it is, therefore, evident that Nature did not produce them as they at preſent are, but that they have degenerated under our care, conſequently we muſt ſearch among the wild animals for thoſe which come the neareſt to the ſheep; we muſt compare them with the domeſtic ſheep of foreign countries, examine the different cauſes of the alteration, change, and degeneration, which has had ſuch influence upon the ſpecies, and endeavour to reſtore all theſe various and pretended ſpecies to a primitive race, as we have done in that of the ox.

The ſheep, with which we are acquainted, is only to be met with in Europe, and ſome of the temperate provinces of Aſia; if tranſported into Guinea, it loſes its wool, and is covered with hair, it decreaſes in fertility, and its fleſh has no longer the ſame taſte. It cannot ſubſiſt in very cold countries, but in cold climates, particularly in Iceland, a breed of ſheep is to be found who have many horns, ſhort tails, and harſh thick wool, under which, as in almoſt every animal in the north, is a ſecond lining, of a ſofter, finer, and thicker wool. In warm countries, on the contrary, the ſheep have generally ſhort horns and a long tail, ſome of which are covered with wool, others with hair, and a third kind with a mixture of wool and hair. The firſt of theſe country ſheep, is that commonly called *Barbary ſheep*, or the *Arabian ſheep*, which reſembles the domeſtic kind, excepting the tail, which is ſo loaded with fat, as to be often more than a foot broad, and weighs upwards of twenty pounds. This ſheep has nothing remarkable but his tail, which he carries as if a pillow was faſtened to his hinder parts. Among this kind of ſheep, there are ſome whoſe tails are ſo long and heavy, that the ſhepherds are obliged to faſten ſmall boards with wheels to them, to enable the animal to walk along. In the Levant, theſe ſheep are cloathed with a very fine wool, while in warm countries, as Madagaſcar, and the Indies, they are covered with hair. The ſuperabundance of fat, which in our ſheep fixes about the kidneys, in theſe animals deſcends upon the vertebræ of the tail; the other parts of their bodies are leſs charged with it than our fed ſheep. This variety is to be attributed to the climate, the food, and the care of men; for theſe broad, or long-tailed ſheep, are domeſtic like ours, and even demand more care and management. This breed is much more diſperſed than the common kind. They are common in Tartary, Perſia, Syria, Egypt, Barbary, Ethiopia, Madagaſcar, and even as far as the Cape of Good Hope.

In the Iſlands of the Archipelago, and chiefly in the iſland of Crete, there is a breed of domeſtic ſheep, of which Belon has given the figure and deſcription under the name of *ſtrepſichoros*: this ſheep is of the make and ſize of our common kind; it is like that covered with wool, and only differs from it by the horns, which are erect, and in the form of a ſcrew.

In ſhort, in the warmeſt countries of Africa and India, there is a breed of large ſheep with rough hair, ſhort horns, hanging ears, and a kind of dewlap under the neck. This ſheep, Leo Africanus, and Marmol call *adimain*, and it is known to the naturaliſts by the names of the *Senegal ram*, the *Guinea ram*, the *Angola ſheep*, *&c.* He is domeſtic, like ours, and like him, ſubject to varieties. The ſheep, though they differ in particular characters, reſemble each other ſo much in other reſpects, that we cannot doubt they are of the ſame kind. Of all domeſtic ſheep, this appears to approach neareſt to a ſtate of nature; he is larger, ſtronger, quicker, and conſequently more capable of ſupporting himſelf; but as he is only found in the hotteſt countries, and cannot bear cold, and as he does not exiſt in his own climate in a wild ſtate, but is domeſtic and obliged to the care of man for his ſupport, we cannot regard him as the primitive breed, from which all the reſt have derived their origin.

In conſidering domeſtic ſheep, therefore, according to the difference of climate, we find, 1. The ſheep of the north, who have many horns, and whoſe wool is coarſe. The ſheep of Iceland, Gothland, Muſcovy, and other parts of the north of Europe, have all coarſe hair, and appear to be of the ſame breed.

2. Our ſheep, whoſe wool is very good and fine in the mild climates of Spain and Perſia, but in hot countries changes to a rough hair. We have already obſerved the conformity in the influence of the climates of Spain and Chorazan, a province of Perſia, upon the hair of goats, cats, and rabbits; it acts in the ſame manner upon the wool of ſheep,

which is very fine in Spain, and ſtill finer in that of Perſia.

3. The broad-tailed ſheep, whoſe wool is alſo very fine in temperate countries, ſuch as Perſia, Syria, and Egypt; but which in warm countries, changes into hair more or leſs coarſe.

4. The *ſtrepſichoros*, or Cretan ſheep, who reſembles ours both in wool and make, excepting the horns, which are erect, and in form of a ſcrew.

5. The *adimain*, or great ſheep of Senegal and India, which are covered with hair, which is more or leſs ſhort or coarſe according to the heat of the climate. All theſe ſheep are only varieties of the ſame ſpecies, and certainly would produce with each other, ſince we know from experience that the he-goat, whoſe ſpecies is farther diſtant, copulates with our ewes. But though theſe five or ſix races of domeſtic ſheep are all varieties of the ſame ſpecies, entirely produced by the difference of climate, treatment, and food, yet none of them appear to be the primitive ſtock from whence the others ſprung; nor is there any of them ſtrong or ſwift enough either to reſiſt, or avoid, carnivorous animals by flight. They all equally need

Engraved for Barr's Buffon.

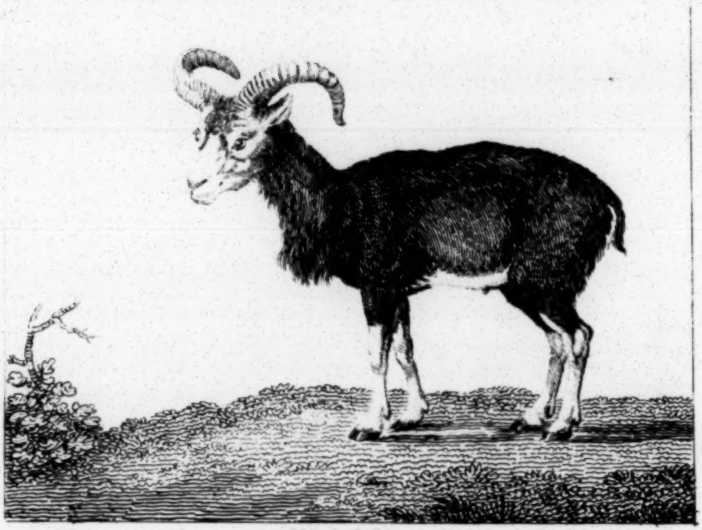

FIG. 139.

Moufflon.

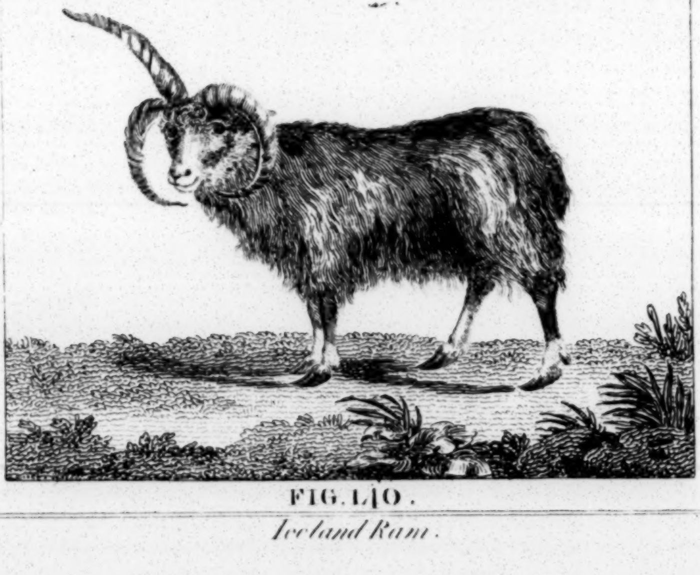

FIG. 140.

Iceland Ram.

need care and protection, and muſt all, therefore, be looked upon as degenerate races, ſormed by the hands of man, and multiplied for his uſe. At the ſame time that he fed, cultivated, and increaſed theſe domeſtic races, he neglected, hunted, and deſtroyed the wild breed, which being ſtrong, and leſs tractable, would, conſequently, be more troubleſome, and leſs uſeful; they are, therefore, only to be met with in ſmall numbers, and in thinly inhabited places, where they can ſupport themſelves. In the mountains of Greece, in the iſlands of Cyprus, Sardinia, and Corſica, and in the deſarts of Tartary, the animal, which we call the *muflon* (*fig.* 139.) is ſtill to be found, and which appears to be the primitive ſtock of all the varieties of ſheep; he lives in a ſtate of nature, and ſubſiſts and multiplies without the help of man; he reſembles the ſeveral kinds of domeſtic ſheep more than any other wild animal; he is livelier, ſtronger, and ſwifter, than any of them; his head, forehead, eyes, and face, are like the ram's; he reſembles him alſo in the form of the horns, and in the whole habit of the body; in ſhort, he produces with the domeſtic ſheep, which alone is ſufficient to demonſtrate that he is of the ſame ſpecies, and the primitive ſtock of the different breeds.

The only difference betwixt the muflon and our ſheep is, that the firſt is covered with hair inſtead of wool; but we have already obſerved, that even in domeſtic ſheep the wool is not an eſſential character, but a production of temperate climates, ſince in hot countries theſe ſame ſheep have no wool, and are all covered with hair; and that, in cold countries, their wool is as coarſe as hair. Hence it is not aſtoniſhing that the primitive wild ſheep, who muſt have endured cold and heat, lived and increaſed without ſhelter in the woods and deſarts ſhould not be covered with wool, which he would ſoon be deprived of among the thickets; and its nature would, in a ſhort time, be changed by the action of the air, and intemperature of the ſeaſons. Beſides, when a he-goat copulates with a domeſtic ewe, the produce is a kind of muflon, for the lamb is covered with hair, and is not a barren mule, but a mongrel, which returns towards the original ſpecies, and which appears to indicate, that the goats and domeſtic ſheep have ſomething in common in their origin; and, as we know by experience, that the he-goat very readily copulates with the ewe, but that the ram is incapable of impregnating the ſhe-goat, it is not to be doubted, that, when theſe animals are in a domeſtic ſtate, the goat is the predominant ſpecies. Thus our ſheep is a ſpecies much more degenerated than that of the goat, and that if the muflon was brought to the ſhe-goat, inſtead of a domeſtic ram, ſhe would produce kids approaching nearer to the ſpecies of the goat, as the lambs produced between the he-goat and ewe return nearer to the ſpecies of the ram.

I know that naturaliſts, who have founded their knowledge of Natural Hiſtory on the diſtinction of ſome particular characters, may make ſome objections to this doctrine, and therefore I ſhall endeavour to anſwer beforehand. The firſt character of the ſheep, they will ſay, is to be cloathed with wool, and that of the goat with hair. The ſecond character of the ram is to have circular horns, which turn backwards, and that of the he-goat is to have them ſtraight and erect. Theſe, they will affirm, are the diſtinctive and infallible marks by which ſheep and goats will always be diſtinguiſhed ; for as to the reſt, they cannot avoid acknowledging, they belong to them both in common. Neither have inciſive teeth in the upper jaw, but each of them have eight in the lower ; both want the canine teeth, and both have cloven feet, ſingle and permanent horns, teats in the ſame parts of the belly, and live upon herbage. The internal organization has ſtill a greater reſemblance, for it appears to be abſolutely the ſame; the number and form of their ſtomachs, the diſpoſition of the viſcera and inteſtines, the ſubſtance of their fleſh, the qualities of the fat and ſeminal liquor, the time they go with young, and the length of their lives, are perfectly the ſame. There only remains, then, the wool and the horns, by which theſe two ſpecies can be diſtinguiſhed; but we have already demonſtrated by facts, that wool is not ſo much a ſubſtance of Nature as a production of the climate, aſſiſted by the care of man. The ſheep of hot and cold countries, and thoſe which are wild, have no wool, while the goats in very mild countries have rather wool than hair, for that of the Angola goat is finer than the wool of our ſheep. This character, therefore, is not eſſential, but purely accidental, and even equivocal, ſince it equally belongs to, or is deficient, in both ſpecies, according to the difference of climates. The character of the horns appears to be ſtill more uncertain; they vary in number, ſize, form, and direction. In our domeſtic ſheep the rams have commonly horns, and the ewes have none; nevertheleſs, I have

I have ſeen in our flocks rams without horns and ewes with them; and ſheep not only with two but four horns. The ſheep of the North, and of Iceland, (*fig.* 140.) have ſometimes eight. In hot countries the rams have only two ſhort horns, and often are deficient of them as well as the ewes. In ſome the horns are ſmooth and round, in others they are furrowed and flat, and the points inſtead of turning back, are often bent and come forward, &c. This character, therefore, is not more conſtant than the firſt, and conſequently, not ſufficient to conſtitute a different ſpecies; the largeneſs of the tail has alſo been conſidered, by ſome naturaliſts, as an eſſential diſtinction, and from the difference in the ſize of that, the wool, and the horns, they have made ſeven or eight different ſpecies of theſe animals, which we have reduced to one; and this reduction appears to be ſo well founded, that we are not afraid of future obſervation.

It appeared neceſſary in compoſing the Hiſtory of Wild Animals, to conſider them one by one, and independent of genus; but on the contrary, in domeſtic animals, it appears requiſite even to extend the genera; becauſe, in Nature, there only exiſts individuals, and ſucceſſion of individuals, that is, ſpecies. Men have had no influence on independent animals, but they have greatly altered, modified, and changed domeſtic ones; therefore, we have made phyſical and real generas, greatly different, from metaphyſical and arbitrary ones, which have never exiſted but in idea. Theſe phyſical genera, are in reality compoſed of all the ſpecies, which by our management have been modified and changed, and as all theſe ſpecies ſo differently altered by the hand of man, have but one common origin in Nature, the whole genus ought to form but one ſpecies. For example, in writing the hiſtory of tigers, we have admitted as many ſpecies as are found in all the different parts of the world, becauſe we are certain that man has never ſubjected, nor changed the ſpecies of thoſe untractable animals, who ſubſiſt at preſent ſuch as Nature produced them. It is the ſame with all other free and independent animals. But in compoſing the hiſtory of oxen and ſheep, we have reduced all the firſt under the ſpecies of a ſingle ox; and the latter under that of a ſingle ſheep, becauſe, it is alſo certain, that man, and not Nature, has produced the different kinds which we have enumerated. Every thing concurs to ſupport this idea, which, although clear in itſelf, may not, perhaps, be ſufficiently underſtood,

derſtood. That all the different oxen produce together, we have demonſtrated by the experiments of M. de la Nux, and the teſtimonies of Meſſrs. Mentzelius and Kalm; that the ſheep alſo produce with one another, with the muflon, and even with the he-goat; I know from my own experience. All the different kinds of oxen, therefore, are no more than one ſpecies, and all the ſheep but another, however extended the genus of both may be.

I ſhall never be weary of repeating, (ſeeing the importance of the ſubject) that it is not by trivial particular characters we can judge of Nature, or diſtinguiſh the ſpecies; that methodical arrangements, far from elucidating the Hiſtory of Animals, ſerve but to obſcure it by multiplying unneceſſary denominations and ſpecies; by making arbitrary genera which are not in Nature, and perpetually confounding real beings with imaginary creatures; by giving falſe ideas of the characteriſtics of the ſpecies, and mixing or ſeparating them without foundation, without knowledge, and often without having ſeen a ſingle individual. It is for this reaſon that our nomenclators conſtantly deceive themſelves, and write almoſt as many errors as lines. We have already given ſo many examples of this, that he muſt be blindly prejudiced indeed, that can in the leaſt doubt of them. Monſieur Gmelin ſpeaks very ſenſibly on this ſubject, when treating of the animal in queſtion *.

We are convinced, as M. Gmelin obſerves, that we cannot acquire a knowledge of Nature, but by making a judicious uſe of our ſenſes, by reflecting, ſeeing, comparing, and, at the ſame time, by rejecting the freedom of forming methodical orders, and little ſyſtems, in which animals are claſſed without the authors having ſeen them, and of which they are only acquainted with the names, which are often equivocal, obſcure, and miſapplied. The wrong uſe of theſe names confounds the ideas in vague and indefinite words, and drowns the truth in a torrent of error. We are alſo convinced, after having compared the muflon with the deſcription of M. Gmelin, that the argali is the ſame animal. We have ſaid they are found in Europe, and in warm countries, ſuch as Greece, the iſland of Cyprus, Sardinia, and Corſica ; nevertheleſs, they are in greater numbers in all the ſouthern parts of Siberia, under a climate rather cold than temperate, and where they appear even to be bigger, ſtronger, and more vigorous. He might,

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* Vide Voyage à Kamtſchatka, par M. Gmelin.

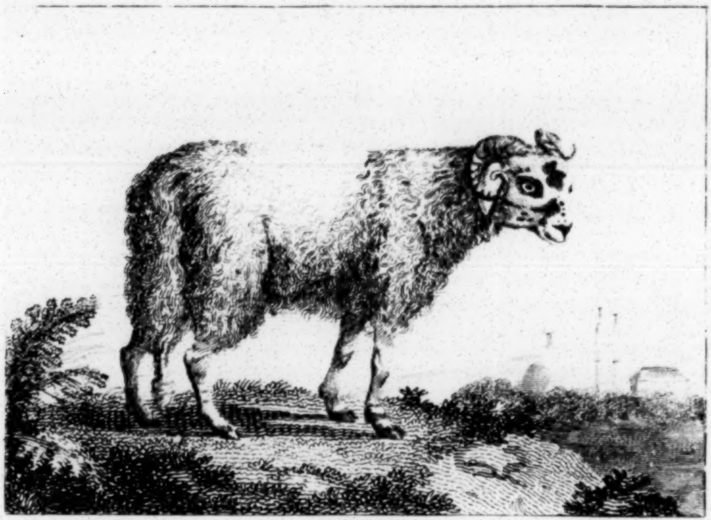

FIG. 141

Barbary Wedder

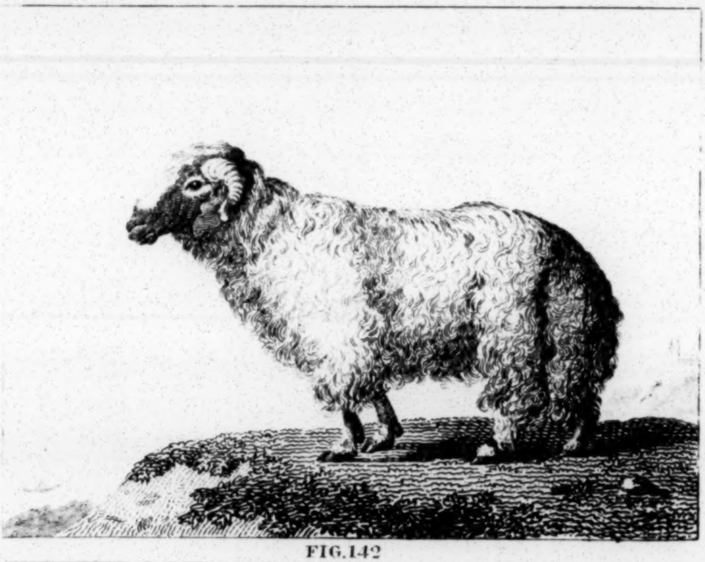

FIG. 142

Ram of Tunis

might, therefore, have ſtocked the north and ſouth parts, and his poſterity have become domeſtic ; after having long endured the rigours of this condition, he might have degenerated, taking relative characters, and new habits of body, according to the different climates, and the different treatments he has received; which being afterwards perpetuated by generation, have given riſe to our domeſtic, and all other kinds of ſheep, of which we have heretofore ſpoken.

SUPPLEMENT.

IN the year 1774, a ram was exhibited at the fair of St. Germain, as a ram of the Cape of Good Hope ; but we found it had been purchaſed at Tunis, and conſidered it to be of the ſame ſpecies as the Barbary ſheep, (*fig.* 141.) before mentioned, for it differed only by the head and tail being ſomewhat more ſhort and thick, yet by way of diſtinction, we have called it the ram of Tunis. (*fig.* 142.) His legs were ſhorter than thoſe of our common ſheep, was plentifully cloathed with wool, and his horns both in ſize and ſhape nearly reſembled the Barbary ſheep. In the ſame year, and at the ſame place, there was alſo another ſhewn under the name of the Morvant of China, *(fig.* 143.*)* which was remarkable for having a ſort of mane on his neck, and long hairs hanging down under his throat, which were a mixture of red and grey, and full ten inches long, the mane extended to about the middle of the back, the hairs of which were not ſo long as thoſe under the throat, were more red, mixed with a few brown and black ones; the wool which covered the other part of the body was rather curled, near three inches long, and of a bright yellow; his legs were red ſpotted with yellow, and his tail yellow and white; he was not ſo high as the common rams, and more reſembled the Indian rams than them; he had a very large belly, in appearance like that of an ewe with young, and his horns were like thoſe of the common kind.

From what we have ſince obſerved we are the more convinced in our former opinion, that the Muflon is the original ſtock of all other ſheep, and that he has a conſtitution ſufficiently ſtrong to live either in cold, temperate, or warm climates. M. Steller ſays, that the rams of Kamtſchatka have the manner of the goat, and the hair of the rein-deer; that ſome of their horns weigh more than thirty pounds; that they are as active as roe-bucks, and live upon the edges

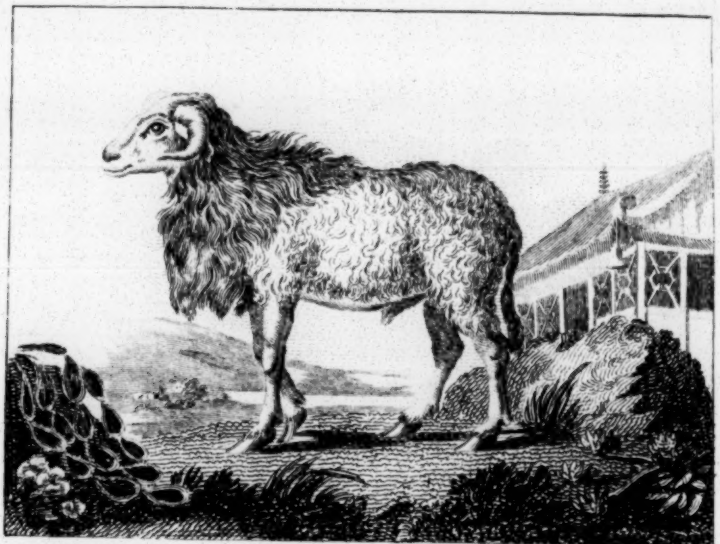

FIG. 143

Morvant

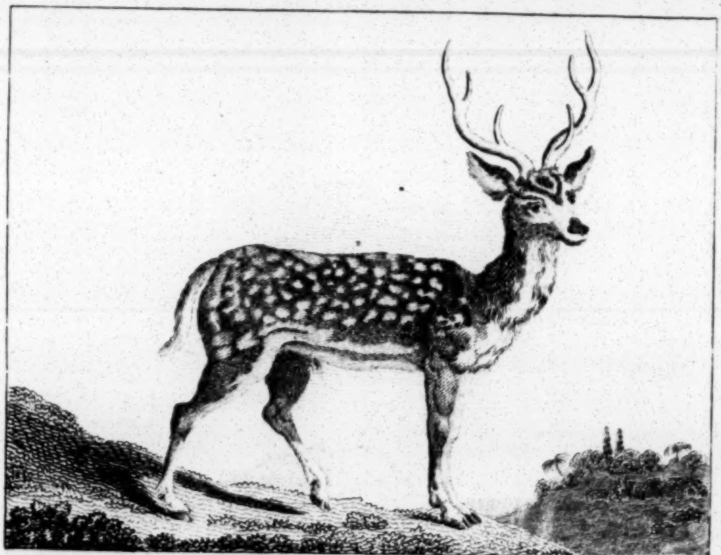

FIG. 144

Axis

edges of mountains, that their fleſh is good, but they are principally hunted for their ſkins.

There remain but very few real muflons in Corſica, the many wars in that iſland having probably been the cauſe of their deſtruction, but the preſent race of ſheep ſtill retain a reſemblance to them in their figures, as I obſerved to be the caſe in one I ſaw in Auguſt, 1774, belonging to the Duc de Vrilliére.

THE AXIS.

THIS animal being only known by the vague names of the *hind* of *Sardinia*, and the *deer* of the *Ganges*, we have preſerved the name given him by Belon, and which he borrowed from Pliny; becauſe, the character of Pliny's axis agrees with this animal, and the name has never been applied to any other; and, therefore, we are not afraid of falling into confuſion or error, for a generic denomination, joined to an epithet derived from the climate, is not a name, but a phraſe, by which we may confound one animal with others of his genus, as this with the ſtag, although, perhaps, it is really diſtinct both in ſpecies and climate. The axis *(fig. 144.)* is one of the ſmall number of ruminating animals who has horns, like the ſtag. He has the ſhape and ſwiftneſs of the fallow-deer. But what diſtinguiſhes him from both is, his having the horns of the former, and figure of the latter; his body is marked with white ſpots[*], elegantly diſpoſed, and ſeparate one from another; and laſtly, he is a native of warm countries[†]; while the ſtag and fallow-deer have their coats of an uniform colour, and are to be met with in great numbers in cold and temperate regions, as well as in warm climates.

The gentlemen of the Academy of Sciences, have given the figure and deſcription of the interior parts of this animal, but ſay very little of his exterior form, and nothing with reſpect to his hiſtory. They have only called him the *Sardinian*

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[*] The Axis is about the ſize of the fallow-deer, the ground colour of his body is a greyiſh yellow beautifully marked with white ſposs; his belly is white, as is alſo the under part of his tail, while the upper inclines to red.

[†] I never ſaw, at Senegal, any ſtag with horns like thoſe in France. *Voyage de le Maire.*—There are ſtags in the peninſula of India, on this ſide the Ganges, whoſe bodies are interſperſed with white ſpots. *Voyage de le Campagnie des Indes de Hollande.*—There are ſtags at Bengal ſpotted like tigers. *Voyage de Luillier.*

Sardinian hind, becauſe, probably, they received that name from the royal menagerie, where there is one of them; but there is no proof of this animal's being a native of Sardinia. No author has mentioned that he exiſts in that iſland, like a wild animal; but on the contrary, we ſee by the paſſages we have quoted, that he is found in the warmeſt countries of Aſia. Thus, the denomination of *Sardinian hind*, has been falſely applied; that of the *Ganges ſtag* agrees beſt, if he really was of the ſame ſpecies as the ſtag, ſince that part of India, which the Ganges waters, appears to be his native country. He is alſo to be met with in Barbary, and, it is probable, that the ſpotted fallow-deer of the Cape of Good Hope, is the ſame animal.

We have already remarked, that no ſpecies approaches ſo near each other, as that of the fallow-deer to the ſtag; nevertheleſs, the axis appears to be an intermediate ſhade between the two. He reſembles the fallow-deer in the ſize of his body, length of his tail, and his coat, which is the ſame during his whole life: the only eſſential difference is in his horns, which nearly reſemble thoſe of the ſtag. The axis, therefore, may be only a variety depending on the climate, and not a different ſpecies from that of the fallow-deer ; for, although he is a native of the warmeſt countries of Aſia, he exiſts and multiplies in Europe. There are many herds of them in the royal menagerie ; and they produce together as freely as the fallow-deer. It has never, however, been obſerved, that they mix either with the fallow-deer, or with the ſtags, and this is the cauſe of our preſuming, that they are not a variety of one or the other, but a particular and intermediate ſpecies. But as no direct and deciſive experiments on this ſubject have yet been made, and as no neceſſary means has been uſed to oblige theſe animals to unite, we will not poſitively affirm that they are two different ſpecies.

We have already ſeen, under the articles of ſtag and fallow-deer, how many inſtances theſe animals give of varieties, eſpecially in the colour of their hair. The ſpecies of the fallow-deer and ſtag, without being very numerous in individuals, are univerſally diffuſed ; both are met with in either continent, and both are ſubject to a great number of varieties, which appear to form laſting kinds. The white ſtags, which are a very ancient race, ſince the Greeks and Romans mention them, and the ſmall brown ſtags, which we have called *Corſican Stags,* are not the only varieties of this ſpecies.

There is in Germany another race, known in that country by the name of *Brandhirtz*, and by our hunters by that of the *Stag of Ardennes*. This ſtag is larger than the common ſtag, and differs from other ſtags not only by its deeper colour, being almoſt black, but alſo by long hair upon the ſhoulders and on the throat. This kind of mane and beard give him ſome affinity, the firſt to the horſe, and the latter to the goat. The ancients have given to this ſtag the compound names of *Hippelaphus* and *Tragelaphus*. As theſe denominations have occaſioned critical diſcuſſions, in which the moſt learned naturaliſts are not agreed, and as Geſner, Caius, and others, have ſaid, that the hippelaphus was the rein-deer, we ſhall here give the reaſons which have occaſioned us to think differently, and have led us to ſuppoſe that the hippelaphus of Ariſtotle is the ſame animal as the tragelaphus of Pliny, and that both theſe names equally denote the ſtag of Ardennes.

Ariſtotle gives to his hippelaphus a kind of mane upon the neck and upon the upper part of the ſhoulders, a beard under the throat, horns to the male reſembling thoſe of the roebucks, and no horns to the female. He ſays, that the hippelaphus is of the ſize of a ſtag, and is found among the Arachotas, a people in India, where wild oxen are alſo to be met with, whoſe bodies are robuſt, their ſkins black, their muzzles raiſed, and their horns bent more backwards than thoſe of the domeſtic ox. It muſt be acknowledged, that Ariſtotle's characters of the hippelaphus, agree nearly with thoſe of the rein-deer and the ſtag of Ardennes; they both have long hair upon the neck and ſhoulders, and alſo on the throat, which forms a kind of beard on the gullet, and not on the chin; but the hippelaphus, being only of the ſize of the ſtag, differs in that from the rein-deer, who is much larger; and what appears to me deciſive on the queſtion is, that the rein-deer being an animal belonging to cold countries, never exiſted among the Arachotas. The country of the Arachotas is one of the provinces which Alexander travelled over in his expedition into India; it is ſituated beyond Mount Caucaſus, between Perſia and India. This hot climate never produced any rein-deer, as they cannot exiſt even in temperate countries, and are only to be met with in the northern regions of both continents. Stags, on the contrary, are not particularly attached to the north, but are to be found in great numbers in warm and temperate

perate climates. Thus we cannot doubt but the hippelaphus of Ariſtotle, which is met with among the Arachotas, and in the ſame countries with the buffalo, is the ſtag of Ardennes, and not the rein-deer.

If we now compare what Pliny ſays upon the tragelaphus with what Artſtotle ſays upon the hippelaphus, and both with Nature, we ſhall find, that the tragelaphus is the ſame animal as the hippelaphus, and therefore the ſame as our ſtag of Ardennes. Pliny ſays, that the tragelaphus is of the ſpecies of our ſtag, and only differs from him by the beard and the hair on his ſhoulders. Theſe characters are poſitive, and can only be applied to the ſtag of Ardennes ; for Pliny ſpeaks elſewhere of the rein-deer under the name of *Alca.* We think ourſelves, therefore, ſufficiently warranted to pronounce, that the tragelaphus of Pliny, and the hippelapus of Ariſtotle, both denote the animal we call the *Stag of Ardennes*; and that the axis of Pliny is the animal commonly called the *Ganges Stag*. Though names have no influence on Nature, yet an explication of them is doing ſervice to thoſe who ſtudy her productions.

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SUPPLEMENT.

IN a letter I received from Mr. Colinſon, in 1765, he informed me that the Duke of Richmond had ſeveral of the ſpecies of the Ganges Stags, or, as I have called it, Axis, in his park; that they lived familiarly with the fallow-deer, did not form ſeparate herds, but even propagated together, and that from the intermixture beautiful varieties were produced.

There was a male and female Chineſe fallow-deer in the royal menagerie in the year 1764; they were above two feet four inches in height; they were dark brown on the body and tail, mixed in ſeveral places with large yellow hairs, and yellow on the belly and legs. Though ſmaller than either the fallow-deer or axis, it was probably only a variety of the latter, and with whom it might intermix, and be perpetuated even in France, eſpecially as they are both natives of the eaſtern regions of Africa.

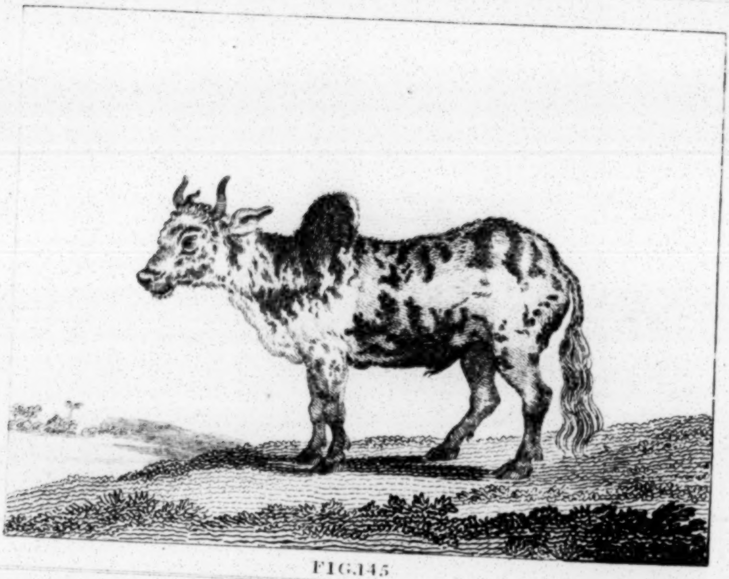

FIG. 145

Zebu

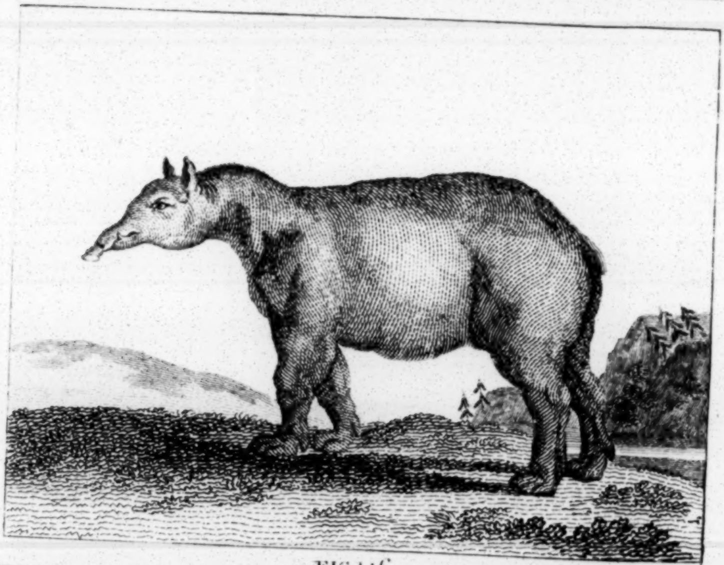

FIG. 146

Tapir

THE TAPIR.

THE Tapir *(fig. 146.)* is the largeſt animal in America, or of the New World, where, as we have before obſerved, animated Nature ſeems to be leſſened, or rather has not had time to arrive to its full dimenſions. In place of the coloſſal maſſes, which the ancient lands of Aſia produce; inſtead of the elephant, rhinoceros, hippopotamus, camel, &c. we only meet in theſe new countries with animals modelled upon a ſmall ſcale; the tapir, lama, pacos, and cabiais, are above twenty times ſmaller than thoſe they ſhould be compared with in the old continent. Matter is not only uſed here prodigiouſly ſparing, but even the forms are imperfect, and appear to have failed or been neglected. The animals of South America, which alone properly belong to this new continent, are almoſt all without tuſks, horns, and tails; their figure is extravagant, their bodies and limbs ill proportioned, and ſome, as the ant-eaters, ſloth, &c. are ſo miſerably formed, that they ſcarcely have the faculties of moving or of eating; with pain they drag on a languiſhing life in the ſolitude of a deſart, and cannot ſubſiſt in the inhabited regions, where man and powerful animals would have ſoon deſtroyed them.

The tapir is of the ſize of a ſmall cow or zebu, but without horns or tail; his legs are ſhort, and his body crooked. When young his coat is ſpotted like that of the ſtag, and afterwards becomes of an uniform dark brown colour. His head is thick and long, with a kind of trunk like the rhinoceros; he has ten cutting teeth, and ten grinders, in the jaw; a character which ſeparates him entirely from the ox, and other ruminating animals. As we have only ſome ſkins of this animal, and a drawing which M. de la Condamine favoured us with, we cannot do better than refer to the deſcriptions given of him from life, by Marcgrave * and Barrere †, at the ſame time, ſubjoining what travellers and hiſtorians have ſaid concerning him.

The tapir appears to be a dull and gloomy animal, who never ſtirs out but in the night, and

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* Marcgrave's Hiſt. Braſil.

† The tapir, or, as he is ſometimes called, the Maipouri, is an amphibious animal, being as much in the water as on land; he has very ſhort hair, interſperſed with black and white hairs *Nat. Hiſt. par Barrere.*

and delights in the water, where he oftener lives than upon land: he chiefly lives in marſhes, and ſeldom goes far from the borders of rivers or lakes. When alarmed, purſued, or wounded, he plunges into the water, and remains under it until he has paſſed to a conſiderable diſtance. Theſe cuſtoms, which he has in common with the hippopotamus, have made ſome naturaliſts imagine him to be of the ſame ſpecies; but they differ as much from each other in nature as the climates are diſtant which they inhabit. To be aſſured of this, there needs no more than to compare the deſcriptions we have recited, with thoſe we have given of the hippopotamus. Although the tapir inhabits the water, he does not feed upon fiſh; and although his mouth is armed with twenty ſharp and inciſive teeth, he is not carnivorous. He lives upon plants and roots, and makes no uſe of his weapons againſt other animals. He is of a mild and timid nature, and flies from every attack or danger. His legs are ſhort, and his body heavy, but, notwithſtanding, he runs very ſwift, and ſwims ſtill better than he runs. His ſkin is of a very firm texture, and ſo bound together that it often reſiſts a bullet. His fleſh is inſipid and coarſe; nevertheleſs the Indians eat it. They commonly go in companies, and are found in Braſil, Paraguay, Guiana, and in all the extent of South America, from the extremity of Chili unto New Spain.

THE ZEBRA.

THE Zebra *(fig. 146.)* is perhaps the handſomeſt and moſt elegant of all quadrupeds. He has the figure and gracefulneſs of the horſe, with the ſwiftneſs of the ſtag. His ſtriped robe of black and white ribbands, is alternately diſpoſed with ſo much regularity and ſymmetry, that it ſeems as if nature had made uſe of the rule and compaſs. Theſe alternate bands of black and white, are the more ſingular, as they are ſtrait, parallel, and as exactly divided, as thoſe of a ſtriped ſtuff; beſides they extend not only over the body, but over the head, thighs, legs, and even the ears and tail; ſo that, at a diſtance, this animal appears as if he was adorned with ribbands, diſpoſed in a regular and elegant manner over every part of the body. In the females, theſe bands are alternately black and white;

Engraved for Barrs Buffon

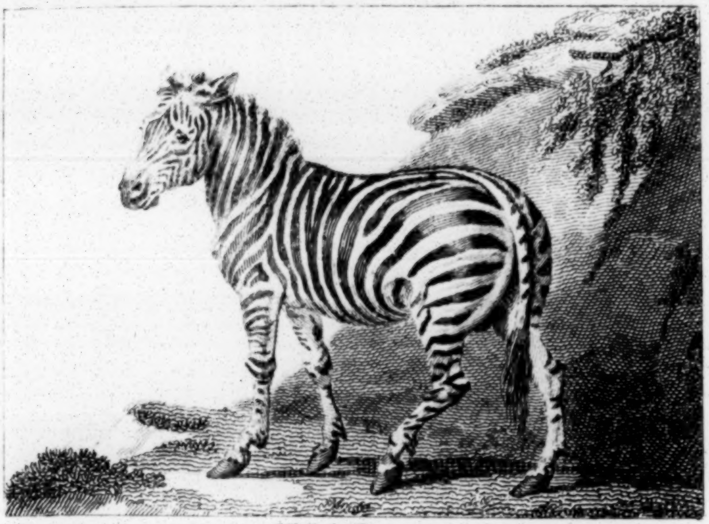

FIG. 147

Zebra

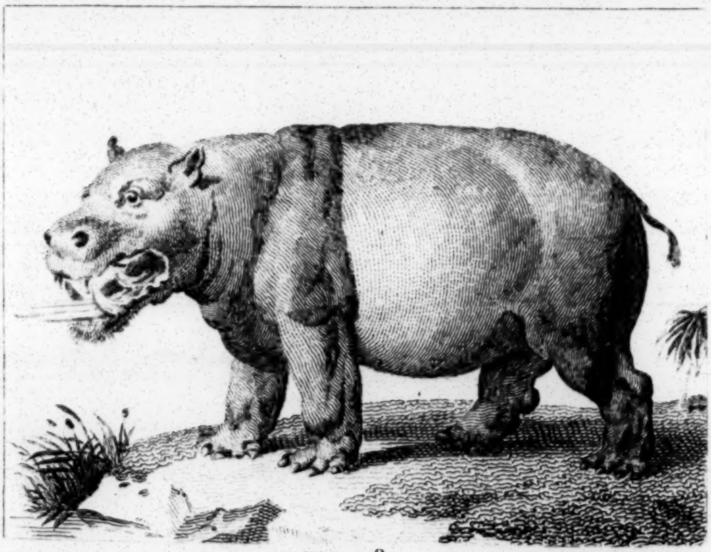

FIG. 148

Hippopotamus

white; in the males they are black and yellow; but the ſhades are always lively and brilliant, upon a ſhort, fine, and thick hair, the luſtre of which increaſes the beauty of the colours. The zebra, in general, is leſs than the horſe, and bigger than the aſs. Although he has often been compared to theſe two animals, by the names of the *wild horſe* and the *ſtriped aſs*, he is a copy of neither, but might rather be called their model, if all was not equally original in Nature, and if every ſpecies had not an equal right to creation.

The zebra, then, is neither a horſe nor an aſs, for we have never learnt that he intermixes with either, though trials have often been made for that purpoſe. She-aſſes, when in heat, were preſented to the zebra, which was in the menagerie of Verſailles, in the year 1761; but he diſdained them, or rather, ſhewed no ſign of emotion; he played with, and even mounted on them, but without any external marks of deſire; and this coldneſs could be attributed to no other cauſe than the diſagreement of their natures; for this zebra was then four years of age, and was very lively and alert in every other exerciſe.

The zebra is not the animal the ancients have mentioned under the name *onager*. In the Levant,

vant, in the eaſtern parts of Aſia, and in the north of Africa, there exiſts a beautiful race of aſſes, which, like the fineſt horſes, are natives of Arabia. This race differs from the common kind, by the largeneſs of the body, the ſlenderneſs of the legs, and the luſtre of the hair. They are of an uniform colour, commonly of a fine mouſe grey, with a black croſs on the back and ſhoulders, ſometimes they are of a bright grey, with a flaxen croſs. Theſe aſſes of Africa and Aſia, although more beautiful than thoſe of Europe, are originally, and equally deſcended from the *onagers*, or *wild aſſes*, which are ſtill in great plenty in Eaſt and South Tartary, Perſia, Syria, the iſlands of the Archipelago, and all Mauritania. The onagers differ from our domeſtic aſſes only by the qualities reſulting from freedom and independence; they are ſtronger and ſwifter, and have more courage and vivacity; the form of their body is the ſame, but they have longer hair, and this difference varies again according to their condition, for our aſſes would have hair equally long, if it was not cut off at the age of four or five months. The hair of young aſſes is at firſt nearly as long as that of young bears. The hide of the wild aſs is alſo harder than that of the domeſtic kind, and we are informed that it is covered with ſmall tubercules, and it is even ſaid that the *ſhagreen*, brought from the Levant, and which we employ for ſo many purpoſes, is made of theſe wild aſſes ſkin. But neither the onagers, nor the beautiful aſſes of Arabia, can be looked upon as the ſtock of the zebra ſpecies, though they reſemble them in figure and ſwiftneſs. That regular variety of the colours of the zebra has never been exhibited by either of them. This beautiful ſpecies is ſingular, and very diſtant from any other. The zebra is alſo of a different climate from the onager, being only to be met with in the moſt eaſtern and ſouthern parts of Africa, from Ethiopia to the Cape of Good Hope, and from thence into Congo. He exiſts neither in Europe, Aſia, America, nor in the northern parts of Africa. Thoſe, which ſome travellers tell us they ſaw at the Braſils, had been tranſported there from Africa. Others, which have been ſeen in Perſia and in Turkey, had been brought thither from Ethiopia; and, in ſhort, almoſt all thoſe we have ſeen in Europe come from the Cape of Good Hope. This point of Africa is their native climate, and where the Dutch have employed all their endeavours to tame and render them domeſtic, without having hitherto been able to ſucceed. That which was the ſubject of this deſcription was very wild when he arrived at the royal menagerie in France, and is not yet entirely tamed; nevertheleſs, he has been brought to let a man ſit on a ſaddle, but great precaution is neceſſary, as two men are obliged to hold the bridle while the third is on his back. His mouth is very hard; his ears are ſo ſenſible that he winces whenever they are touched. He is reſtive, like a vicious horſe, and obſtinate as a mule. But, perhaps, the wild horſe, and the onager, are equally untractable, and, poſſibly, if the zebra was accuſtomed to obedience, and to a domeſtic ſtate, from his earlieſt days, he might become as gentle as the aſs or the horſe, and might be ſubſtituted in their room.

SUPPLEMENT.

ALTHOUGH the aſs is to be met with, either in a wild or domeſtic ſtate, in almoſt every country of the old continent, under a warm or temperate climate, yet there was no ſuch animal in the new, upon its firſt diſcovery. They, were, however, ſoon after tranſported from Europe, and multiplied ſo faſt in America, and having been increaſing there for this two centuries, they may be ſaid to be equally numerous in the four quarters of the globe; but it is not ſo with the zebra, he ſeems confined to the ſouthern parts of Africa, and eſpecially about the Cape of Good Hope, although Lopez has aſſerted that they are more abundant in Barbary than in Congo, and Dapper ſays the ſame in favour of the foreſts of Angola.

Notwithſtanding the ſuperiority this animal maintains over the aſs, from the elegance of his figure, and beauty of colours, yet he appears to be ſomewhat of the ſame ſpecies, for almoſt all travellers have given it the name of ſtriped aſs, from being ſtruck at the firſt ſight with his having a greater reſemblance to the aſs than the horſe; it is not, however, with the common aſs that they compared him, but that large and beautiful part of the ſpecies we have before alluded to; I am, notwithſtanding, inclined to the opinion, that the zebra makes a nearer approach to the ſpecies of the horſe, as he poſſeſſes a ſimilar elegance of figure. In favour of this opinion it has been obſerved, near the Cape of Good Hope, which appears to be the native country of the zebra, that there are horſes ſpotted on the back and bellies, with yellow, black, red, and blue. We will not, however, pretend to undertake the deciſion of this queſtion; but as the Dutch have tranſported a number of theſe animals to Holland, and even yoked them in the Stadtholder's chariot, there is ſome hopes that their nature will ſoon be clearly exemplified. In Holland there are many judicious naturaliſts, and therefore we cannot ſuppoſe they will fail of making theſe animals unite among themſelves, if not with the horſe and the aſs, for that attempted in the royal menagerie in 1761, was but a ſingle experiment; it is poſſible, that as the zebra was but four years old he might not have arrived to maturity, at all events he was not rendered familiar with the females preſented to him, a circumſtance which ſeems requiſite throughout nature, even in an intercourſe with individuals of the ſame ſpecies.

In Tartary they have an animal called *czigithai*, which poſſibly is of the ſame ſpecies as the zebra, as the principal difference between them is in the colour; a difference, we have repeatedly obſerved, may be occaſioned by the varieties of the climates. This czigithai is common in the ſouthern parts of Siberia, Thibet, Dauria, and Tartary. Gerbillan ſays, they are to be met with in the country of the Mongoux and Kakas; that they differ from mules, and cannot be brought to carry burdens. Muller and Gmelin both aſſert that there are numbers of them in the countries of the Tonguſians, who hunt them like other game; that they reſemble a bright bay horſe, excepting they have long ears, and a tail like a cow. It is probable that if they had compared him with the zebra, they would have found a much greater reſemblance. In the Peterſburgh cabinet there are ſtuffed ſkins both of the zebra and czigithai; they differ very much in colour, but yet they may belong to the ſame, or nearly the ſame ſpecies. Beſides there is no other animal in Africa but what is to be found in Aſia, and, therefore, if theſe are different ſpecies, the zebra alone would ſtand as an exception to that general rule. If the czigitai does not belong to the zebra ſpecies, it may poſſibly be the onager, or wild aſs of Aſia; which latter ſhould not by any means be confounded with the zebra. According to all travellers there are various kinds of wild aſſes, and the onager is ſuppoſed to rank at the head of them. The horſe, aſs, onager, and czigathai, may form four diſtinct ſpecies ; and if they are but three, it will remain uncertain whether the latter is an onager or zebra. The onager is mentioned to exceed the horſe in ſwiftneſs, and the very ſame remark is made of the czigathai. Let this particular fact be as it may, the horſe, aſs, zebra, and czigathai, belong to the ſame genus, and are only different branches thereof. From the two firſt being rendered domeſtic mankind have received great advantages, and the two laſt being reduced to a ſimilar ſtate, would, no doubt, likewiſe prove an uſeful acquiſition.

THE HIPPOPOTAMUS.

THOUGH the Hippopotamus has been celebrated from the earlieſt ages ; though mentioned in the ſacred writings under the name of *behemoth*, and though his figure is engraved upon the obeliſks of Egypt, and on the Roman medals ; yet he was but imperfectly known to the ancients. Ariſtotle ſcarcely mentions him, and in the little he does ſay, there are more errors than facts. Pliny copied Ariſtotle, and far from correcting, adds to the number of his errors. It was only towards the ſixteenth century that we had any preciſe information concerning this animal; Belon being then at Conſtantinople, ſaw a living one; of which, however, he has given but an imperfect repreſentation, for the two figures which he has joined to his deſcription, were not taken from the hippopotamus he had ſeen, but were copied from the reverſe of a medal of the Emperor Adrian, and from the coloſſus of the Nile at Rome; ſo that we muſt carry the epocha of the knowledge of this animal to the year 1603, when Frederico Zerenghi, a ſurgeon of Narni, in Italy, printed at Naples, the hiſtory of two of theſe animals, which he had killed in Egypt, in a great ditch he had cauſed to be dug in the environs of the Nile, near Damietta. This little work was written in Italian, and appears to have been neglected by his cotemporary and ſucceeding naturaliſts; notwithſtanding, it is the only good one on the ſubject, and has ſo ſtrong pretenſions to credit, that I ſhall here give an extract and tranſlation from it.

"With a view of obtaining an hippopotamus, (ſays Zerenghi) I ſuborned the people about the Nile, who had ſeen two of theſe animals come from the river, to dig a large pit in the place where they paſſed over, and to cover it with light wood, earth, and graſs. Returning in the evening to the river, they both fell into the pit. The people came immediately and acquainted me with the event, and I haſtened thither with my Janiſſaries. We killed both the animals by firing three charges from a large arquebuſe into each of their heads. They expired immediately, uttering a doleful cry, which more reſembled the bellowing of a buffalo, than the neighing of a horſe. This exploit was made on the 20th of July, 1600. The following day I had them drawn out of the pit, and ſkinned with care; the one was a male, and the other a female. I had both the ſkins ſalted, and filled with the leaves of the ſugar cane, in order to tranſport them to Cairo, where I had them ſalted a ſecond time with greater attention and more convenience. In doing of which we uſed near 400lbs. of ſalt to each ſkin. At my return from Egypt, in 1601, I brought theſe ſkins to Venice, and from thence to Rome. I ſhewed them to many learned phyſicians. Doctor Jerome Aquapendente and the celebrated Aldrovandus, were the only perſons who knew them to be the ſkins of the hippopotamus; and as the work of Aldrovandus was then printing, he had (with my conſent) a figure drawn from the ſkin of the female, and which he has given with his book.

"The hippopotamus has a very thick and hard ſkin; it is impenetrable, unleſs ſome time in water: the mouth is not, as the ancients have ſaid, of a moderate ſize, but enormouſly large; neither are his feet as they ſay, divided into two hoofs, but into four. His ſize is not that of an aſs, for he is much bigger than the largeſt horſe, or buffalo; he has not a tail like that of the hog, but rather that of the tortoiſe, except being incomparably larger; his mouth or noſe is not elevated, but reſembles that of the buffalo, and is much larger; he has no mane, but only ſome ſhort hairs; he does not neigh like the horſe, but his voice is between the bellowing of the buffalo, and the neighing of the horſe. His teeth do not jut out of his mouth, for when it is ſhut, the teeth, although extremely large, are all hid under the lips. The inhabitants of this part of Egypt call him *foras l'bar*, which ſignifies a *ſea-horſe*. Belon is much deceived in his deſcription of this animal, he attributes to him teeth like thoſe of a horſe, which would induce me to think he had never ſeen him, although as he tells us he had, for the teeth of the hippopotamus are very large and very ſingular. To clear up every doubt and uncertainty, continues Zerenghi, I have here given the figure of the female hippopotamus; every proportion has been taken exactly after nature, as well as the meaſure of its body and limbs.

"The length of this hippopotamus, from the extremity of the upper lip to the beginning of the tail, is nearly eleven feet two inches *.

"The circumference of the body is about ten feet.

"The height, from the bottom of the foot to the top of the back, is four feet five inches.

"The circumference of the legs near the ſhoulders is two feet nine inches; and taken lower, is one foot nine inches and a half.

"The height of the legs, from the bottom of the feet to the breaſt, is one foot ten inches and a half.

"The length of the feet, from the extremity of the nails, is about four inches and a half.—*Note.* I have taken the medium meaſure between the two that Zerenghi gives, for the length of the feet.

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* This meaſurement is according to Paris feet and inches.

" The nails are as long as broad, being rather more than two inches.

" There is one nail on each toe, and four toes on each foot.

" The ſkin upon the back is nearly an inch, and that upon the belly about half an inch thick.

" The ſkin is ſo hard when dried, that it cannot be pierced by a muſket ſhot. The people of the country make great ſhields of it, and cut it into thongs or kind of whips. On the ſurface of the ſkin there are a very few fine hairs of a greyiſh colour, and which cannot be perceived at firſt ſight; on the neck there are ſome longer, but they are placed one by one, more or leſs diſtant from each other; but on the lips they form a kind of muſtachio; for there ſprings out ten or twelve of them from the ſame points; theſe hairs are of the ſame colour as the reſt, they are only harder, thicker, and ſomewhat longer, though the longeſt is not more than half an inch.

" The length of the tail is rather more than eleven inches, and its circumference, taken at the beginning, is ſomething more than a foot, and at its extremity, is two inches and upwards.

" The tail is not round, but from the middle to the end is flat, like an eel: upon the tail and the thighs, there are ſome round ſcales of a whitiſh colour, broad as a French bean; theſe ſmall ſcales are alſo ſeen upon the breaſt, the neck, and upon ſome parts of the head.

" The head, from the extremity of the lips to the beginning of the neck, is two feet four inches, and its circumference about five feet eight inches.

" The ears are two inches and near an half long, more than two inches in breadth, are a little pointed, and furniſhed on the inſide with thick, ſhort, and fine hairs, of the ſame colour as the others.

" The ſpace between each angle of the eyes is two inches and upwards, and from one eyelid to the other, is one inch and one line.

" The noſtrils are two inches four lines long, and little more than one inch broad.

" The mouth, when open, meaſures about one foot ſix inches; it is of a ſquare form, and furniſhed with forty-four teeth of different ſhapes. All theſe teeth are ſo hard, that they ſtrike fire with ſteel. The enamel of the canine teeth in particular, have this hardneſs; the interior ſubſtance being not ſo hard. When the hippopotamus keeps his mouth ſhut there are no teeth to be ſeen, for the lips, which are extremely large, completely cover them.

" In reſpect to the figure of this animal, it may be ſaid to be conſtructed between that of the buffalo and hog, becauſe it participates of both, except the inciſive teeth, which have no reſemblance to thoſe of either of theſe animals. The grinders are a little like thoſe of the buffalo or horſe, but much larger. The colour of the body is dark and blackiſh. It is affirmed that the hippopotamus produces but one young at a birth; that he lives on fiſh, crocodiles, and even the fleſh of dead bodies; however, he eats rice, grain, &c. though on conſidering his teeth, we ſhould conclude that Nature had not made him for grazing, but for the deſtruction of other animals."

Zerenghi finiſhes his deſcription by affirming that all the above meaſures were taken from the female hippopotamus, whom the male perfectly reſembled, excepting that he was a third bigger. It were to be wiſhed that the figure given by Zerenghi had been as good as his deſcription; but the drawing was not taken while this animal was living, but from the ſkin of the female. It appears alſo, that it was from this ſame ſkin, preſerved in ſalt, that Fabius Columna deſigned his figure; but the deſcription Columna has given, is not ſo good as that of Zerenghi's, and he muſt be reproached for only quoting the name and not a word about the work of this author, though publiſhed three years before his own: he muſt alſo be accuſed of ſwerving from his deſcription in many eſſential points, without giving any reaſon for it: for example, Columna ſays, that in his time, in 1603, Frederico Zerenghi brought from Egypt to Italy an hippopotamus, preſerved in ſalt; while Zerenghi himſelf ſays, he brought only the ſkin. Columna alſo gives to his hippopotamus thirteen feet in length, to the circumference fourteen, and the legs three feet and a half long; while the meaſures of Zerenghi makes the length of the body but eleven feet two inches, the circumference ten, and the legs one foot ten inches and a half, &c. We muſt not therefore rely on the deſcription of Columna; nor excuſe him upon the ſuppoſition that he took it from another ſubject; for it is evident, from his own words, that he made it from the ſmalleſt of Zerenghi's two hippopotamuſes; ſince he acknowledges that ſome months after Zerenghi ſhewed a ſecond hippopotamus much larger than the firſt. What makes me ſo ſtrenuous on this point is, that no one has rendered juſtice to Zerenghi, who, notwithſtanding, is the only perſon who deſerves eulogiums on this ſubject. On the contrary, every naturaliſt, for this hundred and ſixty years, have attributed to Fabius Columna what they ſhould have given to Zerenghi; and inſtead of ſearching for the work of the laſt they have ſat down contented with copying and applauding that of Columna's, who, however deſerving praiſe in other articles, is, upon this, neither original, exact, nor even honeſt.

The deſcription and figures of the hippopotamus that Proſper Alpin publiſhed more than a hundred years after, are ſtill worſe than thoſe of Columna, having been drawn from ſkins but badly preſerved; and M. de Juſſieu, who wrote of the hippopotamus in 1724, has only deſcribed the ſkeleton of the head and feet.

By comparing theſe deſcriptions, and eſpecially that of Zerenghi, with the information we have drawn from travellers, the hippopotamus appears to be an animal whoſe body is longer and as thick as that of the rhinoceros; that his legs are much ſhorter; that his head is not ſo long, but larger in proportion to his body; that he has no horns, either on the noſe, like the rhinoceros, or on the head like the ruminating animals. His cry, when hurt, according to ancient and modern travellers, reſembles the neighing of a horſe and the bellowing of the buffalo; his uſual voice may be like the neighing of a horſe, from which, however, he differs in every other reſpect. If this is the fact, we may preſume that this reſemblance in the voice has been the reaſon for giving him the name of *hippopotamus*, which ſignifies the *river horſe*; as the howling of the lynx, which reſembles that of the wolf, occaſioned him to be called the lupus cervarius. The cutting teeth of the hippopotamus, and eſpecially the two canine of the lower jaw, are very long, and ſo hard and ſtrong that they ſtrike fire with a piece of ſteel. This is probably what gave riſe to the fable of the ancients, that the hippopotamus vomited fire: theſe canine teeth are ſo white, ſo clean, and ſo hard, that they are preferable to ivory for making artificial teeth. The cutting teeth, eſpecially thoſe of the lower jaw, are very long, cylindrical, and furrowed; the canine teeth are alſo very long, crooked, priſmatic, and ſharp, like the tuſks of a boar: the grinders are ſquare, or rather oblong, nearly like thoſe of a man, and ſo large that a ſingle one weighs more than three pounds; the largeſt of the cutting and the canine teeth are twelve and even ſixteen inches in length, and ſometimes weigh twelve or thirteen pounds each.

In ſhort, to give a juſt idea of the ſize of the hippopotamus we ſhall make uſe of Zerenghi's meaſures, increaſing them one third, becauſe his meaſures were taken from the female, who was one third leſs than the male in all her dimenſions. This male hippopotamus was conſequently ſixteen feet nine inches long, from the extremity of the muzzle to the beginning of the tail; fifteen feet in circumference, and ſix feet and an half in height; his legs were about two feet ten inches long; the length of the head three feet and an half, and eight feet and an half in circumference; the width of the mouth two feet four inches, and the largeſt teeth more than a foot long.

Thus powerfully armed, and with ſuch prodigious ſtrength of body, he might render himſelf formidable to every animal; but he is naturally gentle, and is beſides ſo heavy and ſlow that he could not outrun any other quadruped. He ſwims quicker than he runs, purſues the fiſh, and makes them his prey. He delights much in the water, and lives in it as freely as upon land, yet he has no membranes between his toes like the beaver and otter, and it is plain, that the great eaſe with which he ſwims is owing to the great capacity of his body, which makes his ſpecific gravity nearly equal to the water. Beſides, he remains a long time under water, and walks at the bottom as well as in the open air; and when he quits it to graze upon land he eats ſugar-canes, ruſhes, millet, rice, roots, &c. of which he conſumes great quantities, and does much injury to cultivated lands; but as he is more timid on land than in the water he is very eaſily driven away, and his legs are ſo ſhort that he cannot ſave himſelf by flight, if he is far from any water. His reſource, when in danger, is to plunge into the water, and proceed under it to a great diſtance before he re-appears. He commonly retreats from his purſuers, but if wounded he becomes irritated, and faces about with great fury, ruſhes againſt the boats, ſeizes them with his teeth, tears pieces off, and ſometimes ſinks them. "I have ſeen, ſays a traveller *, an hippopotamus open his mouth, fix one tooth on the gunnel of a boat, and another on the ſecond plank under the keel (that is at leaſt four feet diſtant), pierce the ſide through and through, and in this manner ſink the boat. I have ſeen one lying

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* Dampier, vol. II.

lying by the ſide of the ſea-ſhore, upon whom the waves toſſed a Dutch boat heavily laden, and then retreating left it dry on his back, and which was afterwards carried off again by another wave, without the animal appearing to have received the leaſt injury. I could not diſcover the exact arrangement of his teeth, but they appeared to form the figure of a bow, and were about ſixteen inches long. We fired ſeveral times at one of them, but the ſhot rebounded from his ſkin. The natives conſider him as a kind of deity, and that he cannot be deſtroyed, and frequently declare, if they were to uſe him as we do he would ſoon be the deſtruction of their nets and canoes. When they go a fiſhing in their canoes, and meet with an hippopotamus, they throw fiſh to him, and then he paſſes on without diſturbing their fiſhery any more. He injures moſt when he can reſt himſelf againſt the earth, but when he floats in the water he can only bite. Once, when our boat lay near the ſhore, I ſaw one of them get underneath, lift her above water upon his back, and overſet her with ſix men aboard, but fortunately they received no hurt."——"We dare not, ſays another traveller, irritate the hippopotamus in the water, for three men proceeding in a ſmall canoe to attack one in a river where there was about ten feet water; they diſcovered him walking at the bottom, and wounded him with a long lance, upon which he roſe immediately to the ſurface of the water; and, at one bite, took a great piece out of the ſide of the canoe, which had very nearly overturned it, and it was with difficulty they could make the ſhore." Theſe two examples are ſufficient to give an idea of the ſtrength of theſe animals; and a number of like facts are to be met with in the General Hiſtory of Voyages, by the Abbé Prevoſt, who has given a ſummary of whatever travellers have reported concerning the hippopotamus.

Theſe animals are not numerous, and it even appears are confined to the rivers of Africa. The greateſt part of naturaliſts have ſaid, that the hippopotamus is to be found alſo in the Indies, but the evidence they have of this circumſtance is very equivocal; the moſt poſitive would be that of Alexander, in his letter to Ariſtotle, if we could aſſure ourſelves, that the animals of which Alexander ſpeaks, were really hippopotamuſes. What occaſions me to have ſome doubts on this head is, that Ariſtotle, in deſcribing the hippopotamus in his hiſtory of animals, muſt have ſaid, that they were natives of India, as well as Egypt, if he had thought that the animal, of which Alexander ſpeaks in his letter, had been the true hippopotamus. Oneſicritus, and ſome other authors, ſay the hippopotamus is to be found in the river Indus, but modern travellers, at leaſt thoſe who merit moſt confidence, have not confirmed this fact; they all agree, that this animal is found in the Nile, the Senegal, or Niger, the Gambia, the Zaira, and other great rivers and lakes of Africa, eſpecially in the ſouthern and eaſtern parts. Father Boyn is the only one who ſeems to inſinuate that the hippopotamus is to be met with in Aſia, but his recital appears ſuſpicious, and I think only proves that he is common in Moſambique, and all the eaſtern parts of Africa. At preſent the hippopotamus, which is called the *Nile-horſe*, is ſo rare in the lower Nile, that the inhabitants of Egypt have no idea of the name. He is equally unknown in all the northern parts of Africa, from the Mediterranean to the Bamboo river, which flows at the foot of Mount Atlas; the climate which the hippopotamus actually inhabits, therefore extends only from Senegal to Ethiopia, and from thence to the Cape of Good Hope.

As moſt authors have called the hippopotamus the *ſea-horſe*, or *ſea-cow*, it has ſometimes

times been confounded with the latter, which is a very different animal, and which only inhabits the northern ſeas. It appears, then, to be certain, that the hippopotamuſes, which the author of the deſcription of Muſcovy ſays are found upon the borders of the ſea near to Petzora, are no other than ſea-cows, and Aldrovandus merits reproach for adopting this opinion without examination, and aſſerting that the hippopotamus is found in the northern ſeas; for he not only does not inhabit the north ſeas, but it appears that he is rarely found in thoſe of the ſouth. The teſtimonies of Odoardus, Barboſſa, and Edward Wotton, recounted by Aldrovandus, and which ſeem to prove the hippopotamus inhabits the Indian ſeas, appear to be almoſt as equivocal as that in the deſcription of Muſcovy; and I am inclined to believe that the hippopotamus is not to be found, at leaſt at preſent, but in the greateſt rivers of Africa. Kolbe, who ſays, he has ſeen many of them at the Cape of Good Hope, affirms, that they equally plunge themſelves into the ſea and rivers, and which is aſſerted by other authors. Although Kolbe appears to be more exact than common in his deſcription of the hippopotamus, yet it is doubtful whether he ſaw it ſo often as he ſpeaks of, ſince the figure he has joined to his deſcription is worſe than thoſe of Columna, Aldrovandus, and Proſper Alpinus, which were all drawn from ſtuffed ſkins. It is eaſy to diſcover that the figures and deſcriptions in Kolbe's works, have neither been made on the ſpot, nor taken from Nature. His deſcriptions are written from memory, and moſt of the figures been copied from thoſe of other naturaliſts; the figure which he gives of the hippopotamus, in particular, bears a great reſemblance to the cheropotamus of Proſper Alpinus.

Kolbe, therefore, in affirming, that the hippopotamus lives in the ſea, might poſſibly have copied Pliny, and not ſpoken from his own obſervations. Moſt other authors tell us, that this animal is only to be found in freſh water lakes and in rivers, ſometimes at their mouths, but oftener at great diſtances from the ſea. There are even travellers, who, like Merollo, are ſurpriſed, that the hippopotamus ſhould have been called the ſea-horſe, becauſe, ſay they, this animal cannot bear ſalt water. He commonly remains all day under water, and only quits it at night to graze upon land. The male and female rarely ſeparate. Zerenghi caught both male and female the ſame day, and in the ſame ditch. Dutch travellers ſay, that they bring forth three or four young at a time, but this appears to me very ſuſpicious from the evidence which Zerenghi has mentioned. Beſides, as the hippopotamus is of an enormous bulk, he is in the claſs of the elephant, rhinoceros, whale, and all other large animals, who bring forth but one at a time; and this analogy appears to me more certain than all the ſuppoſitious teſtimonies of different travellers.

SUPPLEMENT.

I HAVE been informed by Mr. Bruce that in his travels through Africa he frequently ſaw hippopotamuſes in Lake Tzana, in Upper Abyſſinia, near the ſources of the Nile; that in this lake theſe animals are more numerous than in any other part of the world, and that he ſaw ſome which were at leaſt twenty feet in length.

Dr. Klockner, in his tranſlation of this work, printed at Amſterdam, ſays, he is ſurpriſed that M. de Buffon ſhould have taken no notice of a paſſage in Diodorus Siculus, reſpecting the hippopotamus, in which that author obſerves, " that among the various animals produced by the Nile, the crocodile and hippopotamus deſerve the moſt particular attention; the latter is five cubits long; he has cloven feet like ruminating animals, and in each of his jaws he has three large tuſks, ſomewhat like thoſe of a wild boar; while the prodigious ſize of his body reſembles that of an elephant. His ſkin is exceeding hard and ſtrong, poſſibly more ſo than of any other animal. He is amphibious, and remains as perfectly at eaſe under water as upon land; he, however, comes on ſhore in the night to ſeek paſture, and if the ſpecies was numerous they would prove very deſtructive to the cultivated lands of Egypt. To hunt this animal a number of men aſſemble, and going in ſeveral boats attack him with one faſtened to a rope, they leave him till he is exhauſted with plunging and the loſs of blood: his fleſh is hard, and not good for digeſtion. Dr. Klockner has alſo given an account of the manner in which the ſkin was prepared of the one ſent from the Cape of Good Hope, and is now in the Prince of Orange's cabinet, the dimenſions of which correſponded very nearly with thoſe of Zerenghi's. He likewiſe adds, that he was informed by the nephew of Charles Marias, a peaſant of French extraction, who ſhot this hippopotamus, and from whom he had the relation, that the animal had wandered a conſiderable way upon land, almoſt to a place called the Mountains of Snow; this Marias aſſerted that the hippopotamus runs very ſwift upon land, and for which reaſon the peaſants, though good hunters, never attempted to attack him but when he was in the water; that it was the practice to watch for him about ſun-ſet, at which time he raiſes his head above water, and perceiving any object of prey, darts upon it with ſurpriſing quickneſs; during his thus floating on the ſurface, he keeps his ears in perpetual motion, conſtantly liſtening if any noiſe is near, and during which time the hunters endeavour to ſhoot him in the head; when wounded he plunges under the water and traverſes about as long as life remains, and then floats to the top; ſome of the party ſwim to him, and being faſtened by ropes he is dragged on ſhore by oxen, where he is immediately diſſected. A full grown hippopotamus generally yields about 2000lbs. weight of fat, which is ſalted and ſent to the Cape, where it is much eſteemed and ſells very dear. By compreſſion a mild oil is drawn from it, and which in Africa is conſidered as a certain remedy for diſeaſes in the breaſt.

In our preceding deſcription of this animal we remarked, that it was probable the hippopotamus was ſo called from his voice having a reſemblance to the neighing of a horſe, but from many authentic accounts, we, however, underſtand it comes nearer the cry of the elephant, or the indiſtinct ſtammerings of perſons who are deaf. When aſleep he alſo makes a ſnorting noiſe by which his retreat is diſcovered at a diſtance; and of this he ſeems aware, as he generally lies among reeds upon marſhy grounds, and where it is very difficult to come near him.

I cannot conſider the remark of Marias, relative to the ſpeed of this animal, as correct, ſince ſo far from its being corroborated, all others affirm the hunters rather attack him on land than in the water, which is a proof they are not afraid of his ſwiftneſs; nay ſome affirm that it is cuſtomary to impede his return by trees and ditches, from his conſtantly endeavouring to regain the water, where he has no enemy to apprehend, as both crocodiles and ſharks carefully avoid him.

As we before obſerved, his ſkin is ſo extremely hard on his back, &c. that neither arrows nor muſket balls can pierce it, but it is thinner on the belly and inſides of the thighs, at which parts therefore the hunters conſtantly aim. They ſometimes endeavour to break his leg with large blunderbuſſes, and if they ſucceed in that their conqueſt is certain. The negroes who do not heſitate to attack the ſharks and crocodiles, commonly avoid the hippopotamus, and would probably never dare to encounter him, but from a preſumption that if they fail he cannot overtake them; thoſe of Angola, Congo, Elmina, and the weſt coaſts of Africa, conſider him as an inferior deity, but yet they feel no repugnance in devouring his fleſh when they can procure it with ſafety.

The female brings forth among the ruſhes upon land, but ſhe ſoon teaches her young to take refuge in the water, and which they do on the ſmalleſt alarm. P. Labat aſſerts, that this animal has ſufficient intelligence to let himſelf blood when he feels a neceſſity, and that he performs the operation by rubbing a particular part of his ſkin againſt a ſharp-pointed rock, and that when he thinks he has bled enough he rolls himſelf in the mud until he has ſtopped the wound; and it has alſo been affirmed that the Indian painters make uſe of his blood as one of their colours.

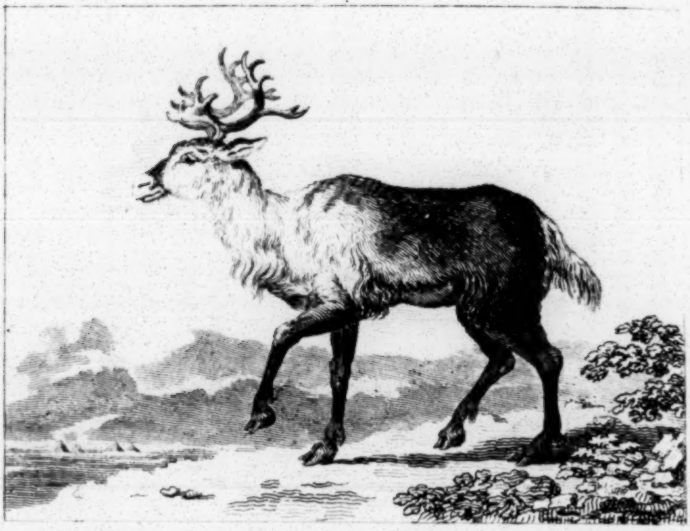

FIG.150

Rein Deer

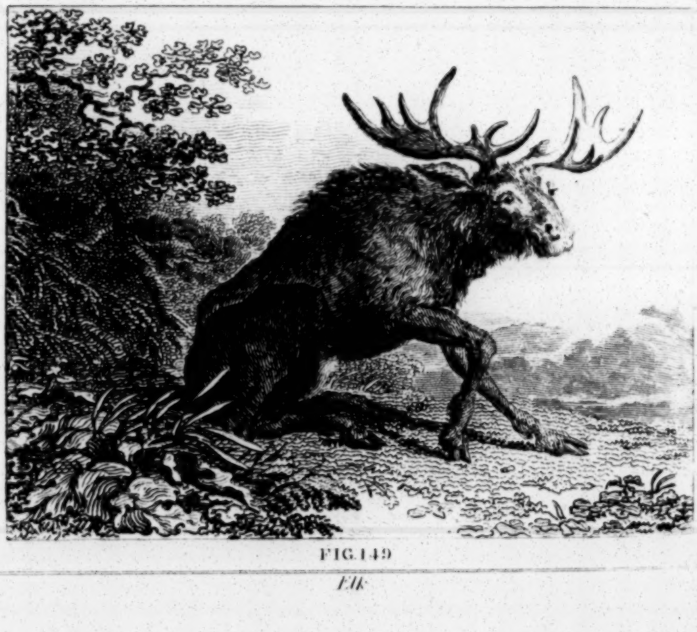

FIG.149

Elk

THE ELK AND THE REIN-DEER.

ALTHOUGH the Elk *(fig. 149.)* and the Rein-deer *(fig. 150.)* are animals of different ſpecies, we ſhall treat of them together, becauſe it is ſcarcely poſſible to write the hiſtory of the one without borrowing a great deal from the other. The greateſt part of ancient, and even modern authors, have confounded them, or deſcribed them by equivocal denominations which might be applied to both. The Greeks had no knowledge either of the elk or the rein-deer, for Ariſtotle makes no mention of them ; and, among the Latins, Julius Cæſar is the firſt who has made uſe of the word *Alce*. Pauſanias, who wrote above an hundred years after Julius Cæſar, is alſo the firſt Greek author who takes notice of this name of Α'λκὴ ; and Pliny, who was nearly cotemporary with Pauſanias, has very obſcurely indicated the elk and the rein-deer under the names *alce*, *machlis*, and *tarandus*. We cannot, therefore, ſay, that the name *alce* is properly Greek or Latin; it ſeems to have been derived from the Celtic tongue, in which the elk is named *elch* or *elk*. The Latin name of the rein-deer is ſtill more uncertain; many naturaliſts have thought that this was the *machlis* of Pliny, becauſe this author, in ſpeaking of the animals of the north, quotes, at the ſame time, the *alce* and the *machlis*, and ſays that the laſt particularly belongs to Scandinavia, and was never ſeen at Rome, nor even in all the extent of the Roman empire. Neverthele ſs, we find in Cæſar's Commentaries a paſſage that we can ſcarcely apply to any other animal than the rein-deer, and which ſeems to prove, that he exiſted at that time in the foreſts of Germany; and fifteen centuries after Julius Cæſar, Gaſton Phœbus ſeems to ſpeak of the rein-deer under the name of the *rangier*, as an animal which exiſted in his time in our foreſts of France: he even gives a tolerable deſcription of this animal *, and of the method of taking and hunting him. As his deſcription cannot be applied to the elk, and as he gives, at the ſame time, the manner of hunting the ſtag, the fallow-deer, the wild goat, the chamois goat, &c. it cannot be ſuppoſed, that under the article of the *rangier* he intended to ſpeak of any of thoſe animals, nor that he was deceived in the application of the name.

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* The Rangier is very much like the ſtag, but has conſiderably larger horns: when he is very much preſſed in the chace he puts his hind parts againſt a tree, and bends his head to the ground, in which ſituation he is perfectly ſecure, as his horns completely defend his whole body, and the dogs are afraid to approach him. He is not higher than the fallow-

It appears, then, from theſe poſitive teſtimonies, that the rein-deer formerly exiſted in France, at leaſt in the mountainous parts, ſuch as the Pyrennees, near which Gaſton Phœbus dwelt as lord of the county of Foix, and that ſince his time they had been deſtroyed like the ſtags, who were heretofore common in this country. It is certain that the rein-deer is now to be found only in the moſt northern countries; but we alſo know, that the climate of France was heretofore much more damp and cold, occaſioned by the number of woods and moraſſes, which have ſince been cut down and drained. By the letter of the Emperor Julian, we learn what was the rigour of cold in Paris in his time: the deſcription he gives of

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fallow-deer, but more bulky; he is hunted with dogs, but he is more commonly ſhot with arrows, or taken in ſnares. He feeds in the ſame manner as the ſtag and fallow-deer, and lives to a great age. *La Venerie de Jacques Dufouilloux.*

of the ice on the Seine perfectly reſembles what the Canadians ſay of the ice on the rivers of Quebec. Gaul, under the ſame latitude as Canada, was, two thouſand years ago, what Canada is at preſent; that is to ſay, a climate cold enough for thoſe animals to live in, which are now only to be met with in the regions of the north.

By comparing and combining the above teſtimonies, it appears to me, that the foreſts of Gaul and Germany were ſtocked with elks and reindeer, and that the paſſages in Cæſar's Commentaries can only be applied to thoſe two animals. As the land was cultivated, and the waters dried up, the temperature of the climate became more mild, and thoſe animals, who delight in cold, immediately abandoned the flat countries, and retired into the ſnowy region, where they lived in the time of Gaſton du Foix; and if they are no longer to be found there, it is becauſe this new temperature has ever ſince been increaſing in heat by the almoſt entire deſtruction of the foreſts, by the ſucceſſive lowering of the mountains, the diminution of the waters, the multiplication of mankind, and by the continual encreaſe of culture, and every other improvement. I am likewiſe of opinion that Pliny has borrowed from Cæſar almoſt all he has written of theſe two animals, and that he was the firſt author of the confuſion in their names. He mentions at the ſame time the *alce* and the *machlis*; from which we muſt naturally conclude, that theſe two names mean two different animals: however, if we remark, 1. That he only ſimply names the alce without any deſcription whatever. 2. That he alone has uſed the name *machlis*, which word is not to be found in either Greek or Latin, but appears to be coined, and which, according to Pliny's commentators, is changed into that of *alce* in many ancient manuſcripts. 3. That he attributes to the machlis all what Julius Cæſar gives to the alce; and, therefore, we cannot doubt but the paſſage in Pliny is corrupted, and that theſe two names mean the ſame animal, namely, the elk. This queſtion, once decided, will alſo decide another. The *machlis* being the *elk*, the *tarandus* muſt be the *rein-deer*. This name of *tarandus* is not to be found in any author before Pliny, and in the interpretation of which, others have greatly varied; however, Agricola and Elliot have not heſitated to apply it to the rein-deer; and for the reaſons juſt deduced, we ſhall ſubſcribe to their opinion. Beſides, we muſt not be ſurpriſed at the ſilence of the Greeks on the ſubject of theſe two animals, nor at the ambiguity by which the Latins have ſpoken of them, ſince the northern climates were abſolutely ſtrangers to the firſt, and only knew the ſecond by relation.

The elk is only found on this, and the rein-deer on the other, ſide of the polar circle in Europe and in Aſia. We find them in America, in the lower latitudes, becauſe the cold is greater there than in Europe. The rein-deer can bear the moſt exceſſive cold; he is found in Spitſbergen; he is common in Greenland, and in the moſt northern parts of Lapland and Aſia. The elk does not approach ſo near the pole; he inhabits Norway, Sweden, Poland, Ruſſia, and all the provinces of Siberia and Tartary, even to the north of China. We meet with him under the name of *Orignal*, and the rein-deer that of *Caribou* in Canada, and in all the northern parts of America. Thoſe naturaliſts, who doubted whether the original was the elk, and the caribou the rein-deer, had not compared Nature with the teſtimonies of travellers. Theſe are certainly the ſame animals, though like all the reſt in the New Continent ſmaller than thoſe in the Old.

We may form a more perfect idea of the elk and rein-deer, by comparing them with the ſtag; the elk is taller, thicker, and ſtands more erect upon his legs; his neck is ſhorter, his hair longer, and his antlers wider and heavier than thoſe of the ſtag. The rein-deer is ſhorter, his legs are ſmaller and thicker, and his feet much larger; his hair is very thickly furniſhed, and his horns much longer and divided into a great number of branches, with flat terminations; while thoſe of the elk appear to have been cut or broached at the edges. Both have long hair under the neck, ſhort tails, and ears much longer than thoſe of the ſtag; they do not leap nor bound like the roe-buck, but their pace is a kind of trot, ſo eaſy and quick, that they go over almoſt as much ground in the ſame time, without being in the leaſt fatigued; for they will ſometimes continue their trot for two days together, without reſting. The rein-deer lives upon the mountains; and the elk dwells in low lands and damp foreſts; both go in herds like the ſtags, and both can be tamed, but the rein-deer with greater eaſe than the elk. The laſt, like the ſtag, has never loſt his liberty, while the rein-deer has been rendered domeſtic by the moſt unenlightened part of mankind. The Laplanders have no other cattle. In this icy climate, which receives only the oblique rays of the ſun, where the night and the day comprehend two ſeaſons ; where the ſnow covers the earth from the beginning of autumn to the end of ſpring, and where the verdure of the ſummer conſiſts in the bramble, juniper, and moſs, man could never expect to procure neceſſary nouriſhment for cattle. The horſe, the ox, the ſheep, and all the other uſeful animals, could not find ſubſiſtence there, nor reſiſt the rigour of the cold ; it would therefore be requiſite to ſearch among the inhabitants of the foreſt for the leaſt wild and profitable animals ; the Laplanders have done what we ſhould be obliged to do, if we were to loſe our cattle ; we ſhould then be forced to tame the ſtags, and the roebucks of our foreſts, to ſupply their place ; this, I am perſuaded, we ſhould eaſily accompliſh, and ſoon derive as much advantage from them as the Laplandersdo from their rein-deer. This example ought to make us ſenſible how far Nature has extended her liberality towards us ; we do not make uſe of one half her treaſure, for her bounty is inexhauſtible ; ſhe has beſtowed on us the horſe, the ox, the ſheep, and all other domeſtic animals, to ſerve, to feed, and clothe us ; and ſhe has other ſpecies in reſerve, which would ably ſupply their deficiency, and which only require us to ſubdue, and make them uſeful to our wants. Man is not acquainted with the powers of Nature, nor how far her productions are to be improved by the exertions of his capacity; and inſtead of exploring her unknown treaſures, he is conſtantly abuſing thoſe with which he is acquainted.

By comparing the advantages which the Laplanders derive from the rein-deer with thoſe we experience from our domeſtic animals, we ſhall ſee that he is worth two or three of them. He is uſed as a horſe to draw ſledges and carriages; he travels with great ſpeed and ſwiftneſs, travelling thirty leagues a day with eaſe, and runs with as much certainty on frozen ſnows as upon the moſſy down. The female affords milk more ſubſtantial and nouriſhing than that of the cow. The fleſh of this animal is excellent food. His hair makes an exceeding good fur, and his hide makes a very ſupple and durable leather. Thus the rein-deer alone affords all that we derive from the horſe, the ox, and the ſheep.

The method in which the Laplanders rear and train theſe animals deſerves our particular attention. Olaus, Scheffer, and Regnard, have given intereſting details on this ſubject, of which the following is an abſtract: Thoſe authors ſay, the horns of the rein-deer are larger, and divided into a greater number of branches than thoſe of the ſtag. The food of this animal, in the winter ſeaſon, is a white moſs, which he finds under the deepeſt ſnow, and which he ploughs up with his horns, or digs up with his feet. In ſummer he rather lives upon the buds and leaves of trees than herbs, which his forward ſpreading horns will not permit him to brouze on with facility. He runs upon the ſnow and ſinks but little, by reaſon of his broad feet. Theſe animals are very mild, and are kept in herds, which turn out greatly to the profit of their owners; the milk, hide, ſinews, bones, hoofs, horns, hair, and the fleſh, are all uſeful and good. The richeſt Laplanders have herds of four or five hundred, and the pooreſt have ten or twelve. They are led out to paſture, and ſhut up in incloſures during the night, to ſhelter them from the outrages of the wolves. If taken to another climate they die in a ſhort time. Formerly, Steno, prince of Sweden, ſent ſix to Frederic, duke of Holſtein; and of later date, in 1533, Guſtavus, king of Sweden, ſent ten over to Pruſſia, both males and females;

males; but they all periſhed, without producing either in a domeſtic or free ſtate. "I would fain (ſays M. Regnard) have brought ſome rein-deer alive into France; laſt year three or four were conducted to Dantzick, where they ſoon died, not being able to bear the heat of that climate."

There are both wild and tame rein-deer in Lapland. In the rutting ſeaſon the females are let looſe to ſeek the wild males in the woods; and as theſe wild males are more robuſt, and ſtronger than the domeſtic ones, the breed from this mixture are preferred for harneſs. Theſe rein-deer are not ſo gentle as the others, for they not only ſometimes refuſe to obey thoſe who guide them, but often turn again and furiouſly attack them with their feet, ſo that they have no other reſource than to cover themſelves with the ſledge until the fury of the beaſt is ſubſided. This ſledge is ſo light that the Laplander can with eaſe turn it over himſelf; the bottom of it is covered with the ſkins of young rein-deers, the hair of which is turned backwards, ſo that the ſledge glides eaſily forwards, and is prevented from recoiling on the mountains. The harneſs of the rein-deer is only a collar made of the ſkin, with the hairs remaining thereon, from whence a trace is brought under the belly, between the legs, and faſtened to the fore part of the ſledge. The Laplander has only a ſingle cord, as a rein, faſtened to the animal's horn, which he throws ſometimes on one ſide and ſometimes on the other of the beaſt, according as he would direct him to the right or left. They can travel four or five leagues an hour; but the quicker he goes the more inconvenient is the motion, and a perſon muſt be well accuſtomed, and travel often, to be able to ſit in the ſledge, and prevent it from turning over.

The rein-deer have outwardly many things in common with the ſtag, and the formation of their interior parts is nearly the ſame. From this conformity of Nature, analogous cuſtoms and ſimilar effects reſult. The rein-deer ſheds his horns every year like the ſtag, and, like him, makes very good veniſon. The rutting ſeaſon of both is towards the end of September. The females of both ſpecies go eight months with young, and produce but one at a birth. The males have the ſame diſguſtful ſmell in their rutting time; and among the female rein-deer there are alſo found ſome who are barren. The young rein-deer, like the young fawns of the ſtag, are variouſly coloured; it is at firſt of a reddiſh colour, and becomes, as they grow old, almoſt of an entire brown. The young follow their mothers two or three years, and they do not attain their full growth till the age of four; it is at this age that they begin to dreſs and exerciſe them for labour. In order to render them more manageable they are caſtrated when young, which operation the Laplanders perform with their teeth. The uncaſtrated males are very difficult to manage, they therefore make uſe of only thoſe which are gelt, among which they chooſe the moſt lively and nimble to draw their ſledges, and the more heavy to carry their proviſions and baggage. They keep only one ſtallion rein-deer for five or ſix females. Theſe animals are troubled with an inſect, called the gad-fly, who burrowing under their ſkins depoſit their eggs, ſo that ſometimes by the end of winter the worms that proceed therefrom render their ſkins as full of holes as a ſieve.

The herds of rein-deer require a great deal of care; they are ſubject to elope, and voluntarily renew their natural liberty: they muſt be cloſely attended, and narrowly watched, and never led to paſture but in open places; and in caſe the herd is numerous they have need of many perſons to keep them together, and to run after thoſe which attempt to ſtray. They are all marked, that they may be known again, for it often happens that they ſtray in the woods, or mix among another herd. In ſhort, the Laplanders are continually occupied in the care of their rein-deer, which conſtitute all their wealth; and they are well acquainted how to procure every convenience, or, more properly, all the neceſſities of life, from theſe animals. In the winter ſeaſon they cloath themſelves from head to foot with the furs of the rein-deer, which are impenetrable to froſt or rain; and in ſummer they make uſe of the hides from which the fur has fallen off. They alſo ſpin the hair, and cover the ſinews which they take from the body of the dead animal, for cordage and thread. They eat the fleſh, drink the milk, and of the latter they alſo make very rich cheeſe. This milk, when churned, gives, inſtead of butter, a kind of ſuet. This particularity, as well as the largeneſs of the horns, and the plenty of fat he affords at the beginning of the rutting ſeaſon, are ſo many proofs of the ſuperabundance of nouriſhment; and what ſtill more ſtrongly proves this ſuperabundance to be exceſſive, or at leaſt greater than in any other ſpecies, is, that the female rein-deer is the only animal who has horns as well as the male, and the only one alſo who ſheds his horns and renews them even when caſtrated. For in ſtags, fallow-deer, and roe-bucks, who have undergone this operation, the horns of the animal remain always in the ſame ſtate they were at the moment of caſtration. Thus the rein-deer is, of all animals, that in which the ſuperfluity of nutritive matter is the moſt apparent, and this, perhaps, is leſs owing to the nature of the animal than to the quality of its food, for the white moſs, which is his only aliment during the winter, is a *lichen*, whoſe ſubſtance reſembles that of the muſhroom; it is very nouriſhing, and is more loaded with organic molecules than the leaves or buds of trees, and it is for this reaſon that the rein-deer has larger horns, and affords more fat than the ſtag; and that the females, and thoſe that are caſtrated, are not deprived of horns: and it is the cauſe alſo of the great variety that is found in the ſize of the horns, and of the figure and number of the branches, beyond what is poſſeſſed by any other of the deer kind. The males who have been neither hunted nor confined, and who feed amply, and at pleaſure, on this ſubſtantial aliment, have prodigious large horns, which extend backward as far as the crupper, and before beyond the muzzle. Thoſe which are gelt have ſmaller horns, yet much larger than the ſtag, and thoſe of the females are ſtill leſs. Thus the horns of the rein-deer differ not only, like others, according to age, but alſo from ſex and caſtration. The horns, therefore, are ſo exceedingly different in individuals, that it is not to be wondered at that authors have differed ſo much upon this ſubject.

Another ſingularity, which is common to the rein-deer and the elk, we muſt not omit. When theſe animals run, their hoofs at every ſtep make a crackling noiſe, as if all their limbs were disjointed; it is this noiſe, or perhaps the ſcent, which inform the wolves of their approach, who way-lay him, and if the wolves are many in number, they will attack and kill him; for the rein-deer is able to defend himſelf againſt a ſingle wolf, not, as may be imagined, with his horns, for they are rather of diſſervice than of uſe, but with his fore-feet, which are very ſtrong, and with which he ſtrikes the wolf with ſuch force, as to ſtun, or drive him away; after which he flies with ſuch ſpeed as to be no longer in danger of being overtaken. He has a more dangerous, though a leſs numerous enemy, in the *roſomack*, or *glutton*; this animal is more voracious, but heavier than the wolf, he does not purſue the rein-deer, but conceals himſelf in a tree, and waits the arrival of his prey; as ſoon as the rein-deer comes within his reach, he darts upon him, faſtens himſelf with his nails upon his back, and tearing his head or neck with his teeth, never quits his place till he has killed him. He makes the like attacks, and uſes the ſame ſtratagems to conquer the elk, who is ſtronger than the rein-deer. This *roſamack*, or *glutton* of the north, is the ſame animal as the *carcajou*, or *quincajou*, of North America; his battles with the *orignal* are famous; and, as we have formerly ſaid, the *orignal* of Canada, is the ſame as the elk of Europe. It is ſingular, that this animal, who is ſcarce bigger than a badger, is able to conquer an elk, whoſe ſize exceeds that of a horſe, and whoſe ſtrength is ſo great, that with a ſingle ſtroke of his foot he can kill a wolf. But it is atteſted by ſo many authorities, that we cannot have the leaſt doubt of its being the fact.

The elk and rein-deer are both ruminating animals, as their method of feeding, and the formation of their interior parts demonſtrate; nevertheleſs, Tornæus, Scheffer, Regnard, Hulden, and others, have affirmed, that the rein-deer does not ruminate. Ray declares this appeared to him incredible ; for, in fact, the rein-deer ruminates like every other animal who has many ſtomachs. A domeſtic rein-deer does not live more than fifteen or ſixteen years , but it muſt be preſumed, that his life is of a longer duration in a wild ſtate ; for this animal being four years before he arrives at his full growth, ought to live twenty-eight or thirty years when in his natural ſtate. The Laplanders hunt the wild rein-deers by different methods, according to the difference of ſeaſons. In the rutting ſeaſon they make uſe of their domeſtic females to attract the wild males. They ſhoot them with the muſket, or with the bow, and they deliver their arrows with ſuch ſtrength, that notwithſtanding the thickneſs of their hair and hide, they often kill one of theſe beaſts with a ſingle arrow.

We have collected the facts in the hiſtory of the rein-deer with the greater care and circumſpection ; becauſe we could not poſſibly keep ſuch an animal alive in theſe parts. Having mentioned my regret on this ſubject to ſome of my friends, Mr. Colinſon, Member of the Royal Society in London, a gentleman as commendable for his virtues, as for his literary merit, was ſo kind as to ſend me over the ſkeleton of a rein deer, and I received from Canada the fœtus of a caribou. By means of theſe two ſpecies, and of ſeveral horns which were brought to us from different places, we have been enabled to verify the general reſemblances, and the principal differences between the rein-deer and the ſtag.

With reſpect to the elk, I ſaw a living one about fifteen years ago; but as he was continued only a few days in Paris, I had not time to have a drawing finiſhed; and that was the only one by which I had an opportunity to verify the deſcription which the gentlemen of the Academy of Sciences had formerly given of this animal, and to aſſure myſelf that it was exact, and perfectly conformable to Nature *.

" The elk (ſays the compiler of the Memoirs of the Academy) is remarkable for the length of his hair, the bigneſs of his ears, the ſmallneſs of his tail, and the form of his eye, the great angle of which is very wide, as well as the mouth, which is much larger than that of

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* With reſpect to the figures of animals, we have in all caſes endeavoured to be more correct than the French edition, by the addition of many original figures accurately ſtudied from the life, and whenever living ſubjects could not be obtained, by comparing thoſe drawings with preſerved figures in different cabinets, and by which means we have been enabled to remedy ſeveral defects; and in no one more ſo than in our figure of the *Elk*.

of oxen, ſtags, or other animals who have cloven feet. The elk which we diſſected was nearly of the ſize of the ſtag. The length of his body was five feet and a half, from the end of the muzzle to the beginning of the tail, which is only two inches long; as it was of a female, the head had no horns; and the neck was only nine inches long and nearly of the ſame breadth. The ears were nine inches long, and four wide. The colour of the hair was not much unlike that of the aſs, the which ſometimes approaches that of the camel; but it differed from that of the aſs, which is ſhorter, and from that of the camel, which is much finer. The length of the hair was three inches, and its thickneſs equalled that of the largeſt mane of a horſe; this thickneſs gradually diminiſhed towards the extremity which was very pointed; towards the root it alſo dimiſhed, but, all of a ſudden, grew thicker again; and this end was of a different colour from the reſt of the hair, being white and diaphanous, like the briſtles of a hog. The hair was as long as that of a bear, but ſtraighter, thicker, flatter, and all of the ſame kind. The upper lip was large and looſened from the gums, but not ſo large as Solin has deſcribed it, nor as Pliny has given to the animal which he terms *machlis*. Theſe authors ſay, that this beaſt is conſtrained to go backwards when he is at paſture to prevent his lip from entangling between his teeth. We obſerved in this diſſection, that Nature had provided againſt this inconvenience by the ſize and ſtrength of the muſcles, deſtined to elevate the upper lip. We alſo found the articulations of the leg very ſtrongly bound together by ligaments, whoſe firmneſs and thickneſs might have given riſe to the opinion that the *alce* was not able to raiſe himſelf up when once he was down. His feet were like thoſe of the ſtag, but larger, and had no other peculiarity. We have obſerved, that the great angle of the eye was ſlit downwards much more than in the ſtag, fallow-deer, and roe-buck, but this ſlit was not in the direction of the opening of the eye, but made an angle with the line which goes from one corner of the eye to the other ; the inferior lachrymal gland was an inch and an half long. We found a part in the brain which, from its ſize, ſeemed to point out a connection with that of the ſmell, which, according to Pauſanias, is more exquiſite in the elk, than in any other animal ; for the olfactory nerves, commonly called the *nammillary noceſſes*, were without compariſon larger than in any other animal we ever diſſected. As for the bit of fleſh which ſome authors have placed upon his back, and others under his chin, if they have not been deceived, or have not been too credulous, thoſe things were particular to thoſe elks of which they have ſpoken."

We can add our own teſtimony to that of the gentlemen of the Academy, for in the female elk we ſaw alive, there was no bunch either under the chin or on the neck; nevertheleſs, Linnæus, who ought to be acquainted with elks better than we can pretend to, as he lives in the ſame country, makes mention of this bunch, and has even given it as an eſſential character of the elk: *Alces cervus cornibus acaulibus palmatis caruncula gutturali.* Linnæus, Syſt. Nat. Edit. X. p. 66.—There is no other method of reconciling this aſſertion of Linnæus, with our negation, than by ſuppoſing this bunch *guttural caruncula*, to belong to the male elk which we have not ſeen. But if this is the caſe, this author ſhould not have made it an eſſential character of the ſpecies, ſince the female has it not; perhaps alſo, this bunch is only a common diſorder among the elks, a kind of wen; for in the two figures of this animal, given by Geſner, the firſt, who has no horns, has a thick caruncula under the neck; and in the ſecond, which repreſents a male elk with horns, there is no caruncula.

In general the elk is much larger and ſtronger than the ſtag or rein-deer. His hair is ſo rough, and his hide ſo hard, that a muſket ball can ſcarcely penetrate it. His legs are very firm, with ſo much agility and ſtrength, eſpecially in the fore feet, that he can kill a man or a wolf by one ſingle ſtroke with his foot. Nevertheleſs, he is hunted nearly as we hunt the ſtag, with men and dogs. It is affirmed, that when he is purſued he often falls down all at once, without either being ſhot or wounded. From this circumſtance ſome have preſumed that this animal was ſubject to the epilepſy, and on this preſumption (which is not well founded, ſince fear alone might be able to produce the ſame effect) this abſurd concluſion has been drawn, that his hoof is a remedy for the epilepſy, and even is a preventative againſt it; and this ridiculous opinion has been ſo univerſally diſperſed, that many people ſtill wear rings, the collet of which incloſes a ſmall piece of the hoof of an elk.

As there are but few people in the northern parts of America, all animals, and particularly elks, are in greater numbers there than in the north of Europe. The ſavages are not ignorant of the art of hunting and taking the elks; they follow them by the track of their feet, and very often for many days together, and by addreſs and perſeverance they often gain their end. Their method of hunting them in winter is particularly ſingular. "They make uſe of rackets (ſays Denys), by means of which they walk on the ſnow without ſinking. The *orignal* does not get forward very faſt, becauſe his ſinking in the ſnow greatly fatigues him. He eats nothing but the young ſhoots of the trees, therefore where the ſavages find the trees eaten they preſently meet with the animals, which are never far off, and which they approach towards very eaſily. They throw darts at them, which are large clubs, having at the end a large pointed bone, which pierces like a ſword. If there are many orignals in one troop the ſavages put them to flight, for then the orignals, placing themſelves in a rank, deſcribe a large circle, ſometimes more than two leagues, and, by frequently traverſing round which, they harden the ſnow ſo much with their feet that they no longer ſink in. The ſavages wait for and kill them as they paſs with their darts." In comparing this relation with thoſe we have already quoted, we find, that the ſavage and the *orignal* of America, are exact copies of the Laplander and elk of Europe.

SUPPLEMENT.

M. ALLEMAND, in his edition, has added ſome remarks reſpecting the elk and rein-deer, and, among them, ſays, that M. de Buffon appears to be warranted in the opinion that the elk of Europe is the orignal of North America, and that the only difference between them is in the ſize ; but that moſt travellers differ with M. de Buffon's general concluſion, that the latter is the largeſt. M. Dudley, in particular, has deſcribed an orignal to the Royal Society, which had been killed by ſome hunters, that was more than ten feet high ; a ſtature that would be requiſite to carry the horns which La Honton has affirmed to weigh from three to four hundred pounds.

The Duke of Richmond had a female orignal in his park, in the year 1766, which he received as a preſent from General Carlton, then governor of Canada; it was not more than a twelvemonth old, was about five feet in height, its back and thighs were of a deep brown, and the belly much lighter; but this animal did not live more than nine or ten months. M. Allemand ſays, that he had received the head of a female orignal from Canada, which was much larger, as it meaſured from the end of the muzzle to the ears, two feet three inches, was two feet eight inches round at the ears, and one foot ten inches near the mouth, and its ears were nine inches long; this head being dried was conſequently leſs in its dimenſions than when the animal was alive.

In the ſame manner this gentleman conſiders M. de Buffon's opinion, that the caribou of America is the ſame animal as the rein-deer of Lapland, and he is induced ſo to do by comparing the drawing of the rein-deer (taken from life by Ridinger) with that of the drawing of an American caribou, ſent him by the Duke of Richmond, who had kept one of thoſe animals a conſiderable time in his park.

To my former remarks concerning the rein-deer I have little to add, yet I muſt avail myſelf of the opportunity of giving the figure (*fig.* 150.) of a female, drawn from life while in the poſſeſſion of the Prince of Condé; he received it from the King of Sweden, who had alſo ſent him two males, one of which died on his way, and the other almoſt as ſoon as he arrived in France. This animal was about the ſize of a hind, though her legs were ſomewhat ſhorter, and in her body ſhe was more bulky. She had alſo horns like the male, but ſhorter, and which were ſeparated into antlers, ſome of them pointing forwards, and others bent backwards. M. de Seve gave me a very particular deſcription of this animal; he ſaid, the length of the body, from the muzzle to the crupper, was five feet one inch; the height of the withers, two feet eleven inches, and nine lines more at the crupper; the hair was very cloſe, about an inch long on the body, longer on the belly, and very ſhort on the legs; upon the body it was a reddiſh brown, intermixed in ſome places with a yellowiſh white, being of a deeper colour on part of the back, on the thighs, on the top of the head, and on the eye-pits; round the eyes and noſtrils were black; the point of the muzzle white; the ears, over which the hair was thick, a yellowiſh white mixed with brown, the inſide of them had long white hairs; the neck, and the long hairs below the breaſt, and upon the upper part of the back, were of a yellowiſh white; the legs and thighs were of a deep brown, and of a greyiſh white on the inſides, of which colour were alſo the hairs which covered the hoofs; the feet were cloven; the two fore toes being broader than the hind ones; they were all very thin, and extremely black."

No concluſion muſt be drawn of the ſize of the rein-deer's horns from the figure we have given, as ſome of them have horns ſo enormous as to reach back to their cruppers, at the ſame time branching out above a foot in the front. There can be little doubt but the large foſſil horns found in Ireland have belonged to a ſpecies of the rein-deer, and of which Mr. Colinſon informed me that he had ſeen ſome which had an interval of ten feet between their extremities; it muſt be to this ſpecies and not to the elk which the foſſil bones of the animal, the Britiſh call Mouſe-deer, muſt be attributed. But it muſt be admitted, that there do not at preſent exiſt any rein-deer of ſufficient ſize and ſtrength to carry horns of that magnitude as are found in a foſſil ſtate in Ireland, in many parts of Europe, and even in North America. I have lately been informed there are two kinds of the rein-deer, the one conſiderably larger than the other, of which I was not acquainted when I gave my former deſcription; the one I referred to, and compared to the caribou of America, and the Greenland fallow-deer, was of the ſmall ſort.

It has been aſſerted by ſome travellers, that the rein-deer is the fallow-deer of the north; while Pontoppidan ſays the rein-deer is not able to exiſt but in the northern regions, and even there they are obliged to dwell on the tops of the higheſt mountains; this author alſo aſſerts that their horns are moveable, that they can turn them about at pleaſure, and that over the eyelids they have an opening in the ſkin, thro' which they ſee, when the glare of ſnow prevents them from opening their eyes.

Upon almoſt the ſlighteſt motion theſe animals make a crackling noiſe; when running, touched, or even ſurpriſed, this noiſe is heard. I have been informed it is the ſame with the elk, but that I cannot aſcertain as the fact.

THE WILD, CHAMOIS, AND OTHER GOATS.

ALTHOUGH it appears that the Greeks were acquainted with the wild and chamois goats, yet they have not deſcribed them by any particular denominations, nor even by characters ſufficiently exact for them to be diſtinguiſhed by ; they have only mentioned them under the general name of *Wild Goats*. They, probably, preſumed, that theſe animals were of the ſame ſpecies as the domeſtic goats, never having given them proper names, as they have done to every other ſpecies of quadrupeds. On the contrary, our modern naturaliſts have regarded the wild and chamois goats as two real and diſtinct ſpecies, and both different from that of the common goat. There are facts and reaſons for and againſt both opinions, of which we ſhall however only give a detail, until we ſhall have learnt whether they can intermix together and produce fertile individuals, experience

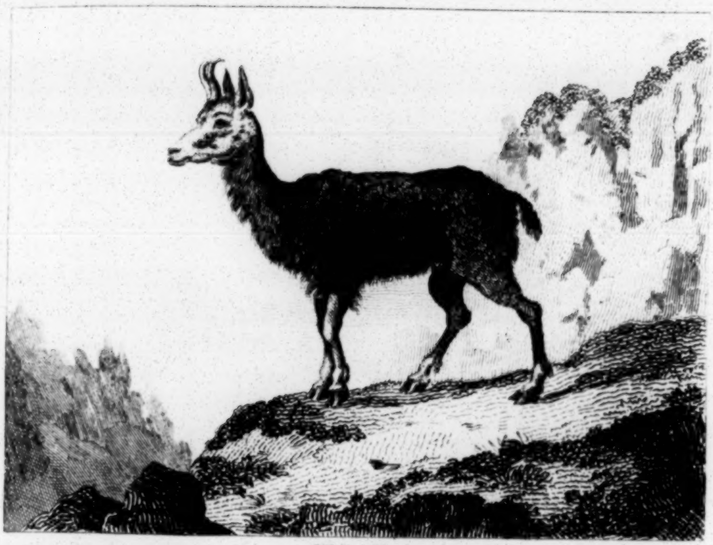

FIG. 151

Chamois Goat

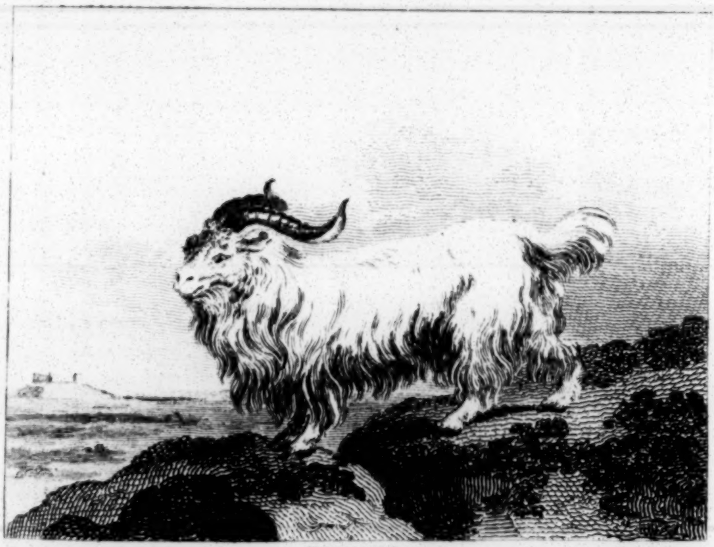

FIG. 152

Buck of Juda

perience having taught us, that it is the ſole criterion on which we can decide the queſtion.

The male wild goat differs from the chamois by the length, thickneſs, and form of his horns; he is alſo more bulky, vigorous, and ſtronger. The female wild goat has ſmaller horns than the male, which nearly reſemble thoſe of the chamois. In other reſpects, theſe two animals have the ſame cuſtoms, the ſame manners, and inhabit the ſame climate; only the wild goat being endowed with more agility, and ſtronger, climbs to the ſummits of the higheſt mountains, while the chamois never goes higher than the ſecond ſtage; but neither of them are to be found in the plains: both clear their way in the ſnow, and both bound from one rock to another. Both are covered with a firm ſolid ſkin, and cloathed in winter with a double fur, with very rough hair outwardly, and a more fine and thicker underneath. Both of them have a black ſtripe on the back, and tails nearly of the ſame ſize. The number of exterior reſemblances is ſo great, and the conformity of the exterior parts is ſo complete, that we might be led to believe, theſe two animals were not only ſimple but conſtant varieties of the ſame ſpecies. The wild, as well as the chamois goats when taken young and brought up with domeſtic goats, are eaſily tamed, imbibe the ſame manners, herd together, return to the ſame fold, and probably, copulate and produce together. But this laſt fact, the moſt important of all, and which alone would decide the queſtion, is not aſcertained. We have never learnt for a certainty whether the wild and the chamois copulate with our goats; we only ſuppoſe it, and in this reſpect agree with the ancients. But our preſumption appears founded upon thoſe analogies which experience has ſeldom contradicted.

Let us, nevertheleſs, take a view of the reaſons againſt it. The wild and chamois goats both ſubſiſt in a ſtate of nature, and both are conſtantly diſtinct. The chamois ſometimes comes of his own accord and joins the flock of our domeſtic kind, but the wild goat never aſſociates with them, at leaſt before he is tamed. The male wild goat and the common he-goat have very long beards, and the chamois has none. The male and female chamois have very ſmall horns: thoſe of the male wild goat are ſo thick and ſo long, that they would ſcarcely be imagined to belong to an animal of his ſize. The chamois alſo appears to differ from the wild goat and the common he-goat, he-goat, by the direction of his horns, which are a little inclined forwards in their lower parts, and bent backwards at the point in the form of a hook; but, as we have already remarked, in ſpeaking of oxen and ſheep, the horns of domeſtic animals vary prodigiouſly, as do alſo thoſe of wild animals, according to the difference of climates. Our female goats have not their horns abſolutely reſembling thoſe of the male. The horns of the male wild goat are not very different from thoſe of our he-goat; and as the female wild goat approaches the domeſtic kind, and even the chamois, in ſize and ſmallneſs of the horns, may we not conclude, that the wild, the chamois, and the domeſtic goat, are, in fact, but one ſpecies, in which the nature of the females is invariable and alike, while the males are ſubject to variations? In this point of view, which, perhaps, is not ſo diſtant from Nature as might be imagined, the wild goat would be the male in the original race of goats, and the chamois the female. This point of view is not imaginary, ſince we can prove by experience, that there are in Nature, animals where the females will equally ſerve the males of different ſpecies, and produce young from both. The ſheep produces with the he-goat as well as with the ram, and always brings forth lambs of its own ſpecies: the ram, on the contrary, does not copulate with the ſhe-goat. We may, therefore, look upon the ſheep as a female common to two different males, and conſequently, conſtitutes a ſpecies independent of the male. It may be the ſame in that of the wild goat; the female alone repreſents the primitive ſpecies, becauſe her nature is conſtant: the males, on the contrary, vary, and there is a great appearance that the domeſtic ſhe-goat, which may be conſidered as the ſame female as thoſe of the chamöis and the wild kind, would produce with theſe three different males, which alone makes the variety in the ſpecies, and conſequently does not alter the identity, although it appears to change the unity of it.

Theſe, like moſt other poſſible accounts, muſt be found in Nature; it even appears, that the females in general contribute more to the ſupport of the ſpecies than the males; for though both concur in the firſt formation of the fœtus, the female, who afterwards alone furniſhes all that is neceſſary to its growth and nutrition, modifies and aſſimilates it more to her own nature, which cannot fail of effacing the impreſſion of the parts, derived from the male. Thus, if we would properly judge of a ſpecies, the females ſhould be the objects examined. The male gives half of the living ſubſtance, the female gives as much, and furniſhes beſides all the neceſſary matter for its formation. A handſome woman has almoſt always fine children; a handſome man with an ugly woman, commonly has children who are ſtill more ugly.

Thus, in the ſame ſpecies, there may ſometimes be two races, the one maſculine, and the other feminine, both of which ſubſiſting and perpetuating their diſtinctive characters, ſeem to conſtitute two different ſpecies; and this is the point where it appears almoſt impoſſible to fix the term between what naturaliſts call *ſpecies* and *variety*. Suppoſe, for example, we ſhould conſtantly couple he-goats with ſome ſheep, and rams with others; it is evident, that after a certain number of generations, there would be eſtabliſhed in the ſpecies of the ſheep, a breed which would tend greatly towards the goat, and would afterwards perpetuate itſelf; for, though the firſt produce with the he-goat would be very little removed from the ſpecies of the mother, and would be a lamb and not a kid, nevertheleſs this lamb would have hair, and ſome other characters of its father. If we afterwards couple the he-goat with theſe female baſtards, the production of this ſecond generation will approach nearer to the ſpecies of the father, ſtill nearer in the third, and ſo on. By this method the ſtrange characters would ſoon prevail over the natural ones, and this fictitious breed might ſupport itſelf, and form a variety in the ſpecies, whoſe origin it would be very difficult to recognize; therefore, what can be done by the influence of the one ſpecies on another, may ſtill be more effectually produced by the ſame ſpecies. If ſtrong females have continually only weak males, in courſe of time, a feminine race will be eſtabliſhed; and if very ſtrong males are put to females of inferior ſtrength and vigour, a maſculine race will be the reſult, and will appear ſo different from the firſt, as hardly to be allowed to have one common origin, and which conſequently will be regarded as really diſtinct and ſeparate ſpecies.

To theſe general reflections, we ſhall add ſome particular obſervations. Linnæus ſpeaks of two animals he had ſeen in Holland, which were of the goat kind; the horns of the firſt were ſhort, almoſt reſting on the ſkull, and its hair was long: the ſecond had erect horns, the points turned back, and the hair ſhort. Theſe animals, which appeared more diſtant in ſpecies than the chamois and the common goat, nevertheleſs produced together, which demonſtrates that theſe differences in the ſhape of the horns, and length of the hair, are not ſpecific and eſſential characters; for as theſe animals produced together, they muſt be regarded as the ſame ſpecies. From this example we may draw a very probable induction, that the chamois and our goat, whoſe principal differences conſiſt in the ſhape of the horns and the length of the hair, are probably one and the ſame ſpecies.

In the royal cabinet there is a ſkeleton of an animal which was given under the name of *capricorne*; it perfectly reſembles the domeſtic goat in the make of the body and the proportion of the bones, and in the form of the lower jaw, that of the wild goat; but he differs from both in the horns; thoſe of the wild-goat have prominent tubercles, and two longitudinal ridges; thoſe of the common he-goat have but one ridge, and no tubercles, the horns of the capricorne have but one ridge, and no tubercles, but only rugoſities which are larger than thoſe of the goat; theſe differences indicate, therefore, an intermediate race between the wild and the domeſtic goat. The horns of the capricorne are alſo ſhort and crooked at the point, like thoſe of the chamois, and, at the ſame time, they are compreſſed, and have rings; thus, they partake at once of the common goat, the wild goat, and the chamois goat.

Mr. Brown, in his Hiſtory of Jamaica, relates, that in that iſland there is actually to be found, 1. The common domeſtic goat of Europe; 2. The chamois; and 3. The wild goat. He affirms, that neither of theſe three animals are natives of America, but have been tranſported from Europe; that they have, like the ſheep, degenerated and become ſmaller in this new country; that the wool of the ſheep is changed into a rough hair, like that of the goat; that the wild goat appears to be a baſtard race, &c. From this we are induced to ſuppoſe that the ſmall goat, with erect horns and crooked at the points, which Linnæus ſaw in Holland, and was ſaid to come from America, is the chamois of Jamaica, that is, the chamois of Europe degenerated, and become leſs by the climate of America; and that the wild goat of Jamaica, which Mr. Brown calls the baſtard wild goat, is our capricorne, which appears to be only a wild goat degenerated, and whoſe horns might have varied by the influence of the climate.

M. Daubenton, after having ſcrupulouſly examined the accounts of the chamois with thoſe of the he-goat and the ram, ſays, that in general, it reſembles more the firſt than the laſt; the prinçipal differences beſides the horns, are, the form and ſize of the forehead, which is leſs elevated and ſhorter in the chamois than in the goat, and the form of the noſe, which is more contracted; ſo that in theſe two, the chamois bears a greater reſemblance to the ram than to the goat. But ſuppoſing, for which there is much reaſon, that the chamois is a conſtant variety of the ſpecies of the he-goat, as the bull-dog and greyhound are fixed varieties in the ſpecies of the dog, we ſhall ſee that the differences in the ſize of the forehead and the poſition of the noſe, are not nearly ſo great in the chamois, relatively to the goat, as in the bull-dog and greyhound, which, nevertheleſs, produce together, and are certainly of the ſame ſpecies. In other reſpects, as the chamois reſembles the goat by a greater number of characters than the ram, it conſtitutes a particular ſpecies, it muſt neceſſarily be an intermediate one betwixt the goat and the ram. We have obſerved, that the he-goat and the ſheep produce together, therefore the chamois, which is an intermediate ſpecies between the two, and at the ſame time is much nearer the goat than the ram, by the number of reſemblances, ought to copulate with the ſhe-goat, and conſequently muſt not be conſidered but as a variety, conſtant in this ſpecies.

As the chamois which was tranſported to, and became leſs in America, produces with the ſmall goat of Africa, there can be little doubt but he would alſo produce with the ſhe-goats of the common kind. The chamois, therefore, is only a conſtant variety in the ſpecies of the goat, as the bull-dog is in that of the dog; and, on the other hand, we can ſcarcely queſtion, that the wild goat is not the primitive goat in a ſtate of nature, and is, with reſpect to domeſtic goats, what the muflon is to the ſheep. The wild goat exactly reſembles the domeſtic he-goat, in figure, conformation, and in natural and phyſical habits; it only varies by two ſlight differences; the horns of the wild goat are larger than thoſe of the common he-goat, the former having two longitudinal ridges, and the latter but one; they have alſo large tranſverſe rings which mark the number of years of their growth, while thoſe of the common he-goats are only marked with tranſverſe ſtrokes. The figure of their bodies are perfectly alike. The interior part is alſo ſimilar, excepting the ſpleen, which is oval in the wild goat, and approaches nearer to that of the roe-buck, or ſtag, than to that of the he-goat, or ram. This laſt difference may proceed from the violent exerciſe of this animal. The wild goat runs as faſt as the ſtag, and leaps lighter than the roe-buck; the ſpleen, therefore, ſhould be made like that of the ſwifteſt running animals. This difference, then, is owing leſs to Nature than cuſtom, and it is to be preſumed, that if our domeſtic he-goats were to become wild, and were forced to run and to leap like the wild goats, the ſpleen would ſoon aſſume the form moſt convenient to this exerciſe. With reſpect to his horns, the differences, though very apparent, do not prevent their more reſembling thoſe of the he-goat than of any other animal. Thus the wild and common he-goat approach nearer each other than to any other animal, even in this part, which is the moſt different of all, we muſt conclude, as they are alike in every other particular, that, notwithſtanding this ſlight and ſingle diſagreement, they both are animals of the ſame ſpecies.

I conſider, therefore, the wild, the chamois, and the domeſtic goat, as one ſpecies, in which the males have undergone greater varieties than the females; and I find, at the ſame time, ſecondary varieties in the domeſtic kind, which are leſs equivocal, as they belong equally to the males and females. We have ſeen that the goats of Angora, though very different from ours, by the hair and horns, are, nevertheleſs, of the ſame ſpecies. The ſame may be ſaid of the Juda goat, which Linnæus with much reaſon has conſidered a variety of the domeſtic ſpecies. This goat, which is common in Guinea, Angola, and other parts of Africa, differs not from ours, excepting its being ſmaller, fatter, and more ſquat; his fleſh is alſo better, and preferred in that country to mutton, as we prefer the fleſh of the ſheep to that of the goat. It is the ſame with the Levant, or Mambrina goat, with long hanging ears; that is only a variety of the goat of Angora, who has alſo hanging ears, but not ſo long. The ancients were acquainted with theſe goats, but they did not ſeparate them from the common ſpecies. The variety of the Mambrina goat is more diffuſed than that of the goat of Angora; for we find theſe very long-eared goats in Egypt, and the Eaſt-Indies, as well as in Syria; they give plenty of good milk, and which the eaſtern nations prefer to that of the cow, or female buffalo.

With reſpect to the ſmall goat that Linnæus ſaw alive, and which produced with the American chamois, it muſt, as we have obſerved, been originally tranſported from Africa; for it ſo greatly reſembles the African he-goat, that we cannot doubt of its being of the ſame ſpecies, or to which, at leaſt, he owes his firſt origin. This goat is ſmall in Africa, and would become ſtill leſs in America; and we know, by the teſtimony of travellers, that it has for a long time been as cuſtomary to tranſport from Africa, as from Europe into America, ſheep, hogs, and goats, whoſe races ſtill ſubſiſt without any other alteration than a diminution in the ſize.

After having examined the different varieties of goats, and conſidered them relatively to each other, it appears to me, that of the nine or ten ſpecies of which the nomenclators ſpeak, there is, in reality, but one; for inſtance, 1. The wild he-goat is the principal ſtock of the ſpecies. 2. The capricorne is the wild goat degenerated by the influence of climate. 3. The domeſtic he-goat derives his origin from the wild he-goat. 4. The chamois is only a variety in the ſpecies of the ſhe-goat, with whom he ſhould be able to produce as well as the wild goat. 5. The ſmall goat with erect horns, crooked at the points, which Linnæus ſpeaks of, is the chamois of Europe become ſmaller in America. 6. The other ſmall goat with horns lying flat, and which produced with the ſmall chamois of America, is the ſame as the he-goat of Africa, and the production of theſe two animals prove, that our chamois and domeſtic he-goat would alſo produce together, and are, conſequently, of the ſame ſpecies. 7. The dwarf goat, which is probably the female of the African buck, and, like the male, only a variety of the common kind. 8. It is the ſame with the bucks and ſhe-goats of Juda, they are only varieties of our domeſtic goats. 9. The goat of Angora is alſo of the ſame ſpecies, ſince it produces with our goats. 10. The Mambrina goat, with large pendulous ears, is a variety in the race of the goats of Angora. Theſe ten animals, therefore, are only ten different races of one ſpecies, produced by the difference of climate. *Capræ in multas ſimilitudines tranſfigurantur*, ſays Pliny; and, in effect, we ſee by this enumeration, that the goats, although eſſentially like each other, yet vary much in their external form; and if we ſhould comprehend, with Pliny, under the generic name of Goats, not only all thoſe we have mentioned, but alſo the roe-buck, the gazelle, the antelope, &c. this would be the moſt extended ſpecies in Nature, and contains more kinds and varieties than that of the dog. But Pliny was not ſufficiently informed of the real differences of ſpecies when he joined the roe-buck, antelope, &c. to the ſpecies of the goat. Theſe animals, though bearing much reſemblance to the goat in many reſpects, yet are different ſpecies; and we ſhall ſee, from the following articles, how much the antelopes vary, both in ſpecies and races; and after enumerating all the goats and all the antelopes we ſhall find many animals ſtill remain, which participate of both. In the whole hiſtory of quadrupeds I find nothing more difficult to explain, nor more confuſed or uncertain, than the accounts given by travellers of goats, antelopes, and other ſpecies which have an affinity to them. I have exerted all my endeavours, and employed all my attention, to throw ſome light upon it, and ſhall not regret my labour, if what I now write may contribute to prevent errors, fix ideas, and bring forth the truth, by extending the views of thoſe who would ſtudy Nature.——But to our ſubject.

All goats are liable to vertigos; this diſeaſe is alſo common to the wild and chamois goats, as well as the inclination to climb up rocks, and the cuſtom of continually licking ſtones, eſpecially thoſe which are impregnated with nitre or ſalt. In the Alps are rocks which have been hollowed by the tongues of the chamois; theſe are commonly compoſed of ſoft and calcinable ſtones, in which there is always a certain quantity of nitre. Theſe natural agreements, theſe conformable cuſtoms, appear to be ſufficient indexes of the identity of ſpecies. The Greeks, as we have ſaid, did not ſeparate theſe into three different ſpecies; and our hunters, who, probably, never conſulted the Greeks, have always looked upon them as the ſame ſpecies. Gaſton Phœbus, when ſpeaking of the wild goat, particulariſes him under the name of the wild buck; and the chamois, which he calls *yſarus* and *ſarris*, is alſo, according to him, but another wild goat. I own that all theſe authorities do not make a complete proof, but by uniting them with the facts and reaſons we have produced, they form ſuch ſtrong preſumptions upon the unity of the ſpecies of theſe three animals, that we can harbour no doubt on the ſubject.

The wild and chamois goats, one of which I have looked upon as the male, and the other as the female ſtock of the goat kind, are only found, like the muflon, who is the ſtock of the ſheep, in deſarts, and on the moſt craggy and higheſt mountains. The Alps, the Pyrennees,

rennees, the mountains of Greece, and thoſe in the iſlands of the Archipelago, are almoſt the only places where the wild and the chamois goats are to be found. But although both diſlike heat and inhabit the regions of ſnow and ice, yet they have alſo an averſion to exceſſive cold. In ſummer, they chuſe the north ſide of the mountains; in winter, they move to the ſouthern and even deſcend from the ſummits. Neither can ſupport themſelves on their legs upon the ice when it is ſmooth, but if there be the leaſt inequalities on its ſurface, they bound along with ſecurity.

The chace of theſe animals is very laborious, and dogs are almoſt uſeleſs in it. It is likewiſe very dangerous, for the animal finding himſelf hard puſhed will turn and ſtrike the hunter with his head, and ſometimes throw him over a precipice. The chamois is as ſwift, though not ſo ſtrong, as the wild goats, they are more numerous, and commonly go in herds; they are not, however, ſo numerous as they were formerly, at leaſt in our Alpine and Pyrenean mountains.

M. Peyroud, ſurveyor of the chryſtal mines in the Alps, brought over a living chamois, and gave us the following excellent information on the natural habits and manners of this animal.

mal. " The chamois is a wild animal, yet very docile; he inhabits only rocks and mountains. He is about the ſize of a domeſtic goat, and reſembles him in many reſpects. He is moſt agreeably lively, and active beyond expreſſion. His hair is ſhort, like that of the doe; in ſpring it is of an aſh-colour, in ſummer rather yellow; in autumn a deep yellow, and in winter of a blackiſh brown. The chamois are ſound in great numbers in the mountains of Dauphiny, Piedmont, Savoy, Switzerland, and Germany: they live ſociably together, and are ſound in flocks of from two to fifteen or twenty, and ſometimes they are ſeen to the number of from ſixty to an hundred, diſperſed in ſmall flocks upon the crags of a mountain. The large males keep ſeparate from the reſt, except in their rutting-time, when they approach the ſemales. All which time they have a very ſtrong ſmell; they bleat often and run from one mountain to another. The time of their coupling is from the beginning of October to the end of November, and they bring forth in March and April. The young follow the dam for about five months, and ſometimes longer, if the hunters, or the wolves, do not ſeparate them. It is aſſerted that they live between twenty and thirty years. Their fleſh is very good, and ſome of the fatteſt afford ten or twelve pounds of ſuet, which is better and harder than that of the goat. The blood of this animal is extremely hot, and is ſaid to approach very near to that of the wild goat in its qualities and virtues, and may prove of the ſame ſervice, for the effects are the ſame when taken in a double quantity: it is reckoned very good againſt pleuriſies, a great purifier of the blood, and an aſſiſtant for perſpiration. The hunters very often mix the blood of the wild and chamois goats together, and ſometimes they ſell the blood of the wild goat for that of the chamois. It is very difficult to diſtinguiſh the one from the other, which proves there can be but very little difference in them. The cry of the chamois is not diſtinct but faint, and reſembling that of a hoarſe domeſtic goat: it is by this cry they collect together, and by which the mother calls her young. But when they are frightened, or perceive an enemy, or any object not perfectly known to them, they warn the reſt of the flock by a kind of whiſtling noiſe. The chamois has a very penetrating ſight, and his hearing and ſmell are not leſs diſtinguiſhing. When he ſees a man near he ſtops for a moment, and then flies off with the utmoſt ſpeed. When the wind is in its favour he can ſmell a human creature for more than half a mile diſtance; therefore when he hears or ſcents any thing which he cannot ſee, he begins to whiſtle or blow with ſuch force that the rocks and the foreſts re-echo the ſound: this whiſtling continues as long as the breath will permit: in the beginning it is very ſhrill, and deeper towards the cloſe. The animal then reſts a moment, after this alarm, to inſpect farther into the danger, and having confirmed his ſuſpicion, he recommences his whiſtling, and continues it, by intervals, till it has ſpread the alarm to a great diſtance. During this time he is moſt violently agitated; he ſtrikes the ground with his feet; he bounds from rock to rock; he turns and looks round; leaps from one precipice to another; and when he obtains a ſight of his enemy he flies from it with all ſpeed. The whiſtling of the male is more acute than that of the female: it is performed through the noſtrils, and is no more than a very ſtrong blowing, and reſembles the noiſe that a man would make by fixing his tongue to the palate, keeping the teeth nearly ſhut, the lips open, and a little lengthened, and blowing with all his force. The chamois feeds on the beſt herbage, and chuſes the moſt delicate parts of plants, as the flowers and moſt tender buds. He is not leſs fond of ſeveral aromatic herbs, which grow upon the ſides of the Alps. He drinks very little while he feeds upon the ſucculent herbage. He ruminates like the common goat. The food he makes uſe of ſtrongly marks the warmth of his conſtitution, as do his large eyes, which are admired for their roundneſs and ſparkling, and the vivacity of his diſpoſition. His head is crowned with two ſmall horns, of about half a foot long; they are of a beautiful black, and riſe from the forehead almoſt betwixt the eyes, and, quite contrary to thoſe of other animals, inſtead of bending backwards they jet out forward above the eyes, and bend backward at the extremities in a ſmall circle, and end in a very ſharp point. His ears are placed in a very elegant manner near the horns, and there are ſtripes of black on each ſide of the face, the reſt being of a whitiſh yellow, which never changes. The horns of this animal are often made uſe of for the heads of canes; thoſe of the female are leſs, and not ſo much bent; and ſome farriers make uſe of them for bleeding of cattle. The hides of theſe animals are very ſtrong, nervous, and ſupple, and when dreſſed, excellent breeches, veſts, and gloves, are made of them ; theſe ſort of cloathing are very durable, and of very great ſervice to labouring men. The chamois is a native of cold countries, and generally prefers craggy rocks and high places ; they indeed frequent the woods, but it is only thoſe in the higheſt regions, where the foreſts conſiſt of firs, larch, and beech trees. Theſe animals have ſo much dread of heat, that in ſummer they are only to be found in the caverns of rocks, amidſt fragments of congealed ice, or in foreſts where the high and ſpreading trees form a ſhade for them, or under rough and hanging precipices that face the north, where the rays of the ſun never diſturb them. They go to paſture both morning and evening, but ſeldom during the day. They traverſe over rocks with great facility, where the dogs cannot follow them. There is nothing more wonderful than to ſee them climbing and deſcending precipices, inacceſſible to all other quadrupeds. They mount and deſcend always in an oblique direction, and throw themſelves down a rock of twenty or thirty feet, and alight with great ſecurity. In deſcending they ſtrike the rock with the feet, three or four times, to ſtop the velocity of their motion ; and when they have got upon the baſe below, they at once ſeem fixed and ſecure. In fact, to ſee them thus leaping among the precipices, they ſeem rather to have wings than legs, ſo great is the ſtrength of their nerves. Some writers have pretended that they uſe their horns for climbing and deſcending the precipices. I have ſeen and killed many of theſe animals, but I never ſaw them uſe their horns for that purpoſe, nor have I ever found any hunter who could confirm this aſſertion. The chamois aſcends and deſcends precipices with great eaſe, by the agility and ſtrength of his legs, which are very long, the hind ones being ſomewhat the longeſt and always crooked, aſſiſts them in throwing themſelves forwards, and is of great ſervice by breaking the force of the fall. It is aſſerted, that when they feed, one of them is deputed to ſtand ſentinel for the ſecurity of the reſt. I have ſeen many flocks of theſe animals, but never obſerved that to be the caſe. It is certain that when there are a great number of them, there will be always ſome looking about while the reſt are grazing; but there is nothing in this particularly diſtinguiſhable from a flock of ſheep; for the firſt who perceives any danger warns all the reſt, and in an inſtant the terror with which he is ſtruck ſpreads through the whole flock. During the rigours of winter, and gloves, are made of them; theſe ſort of cloathing are very durable, and of very great ſervice to labouring men. The chamois is a native of cold countries, and generally prefers craggy rocks and high places; they indeed frequent the woods, but it is only thoſe in the higheſt regions, where the foreſts conſiſt of firs, larch, and beech trees. 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It is certain that when there are a great number of them, there will be always ſome looking about while the reſt are grazing; but there is nothing in this particularly diſtinguiſhable from a flock of ſheep; for the firſt who perceives any danger warns all the reſt, and in an inſtant the terror with which he is ſtruck ſpreads through the whole flock. During the rigours of winter, and in the deep ſnows, the chamois retreats to the lower foreſts, and feeds upon the pine leaves, buds of trees, buſhes, or ſuch dry or green ſhrubs and graſs as they can diſcover by ſcratching off the ſnow with their feet. The more craggy and uneven the foreſt, the more this animal is pleaſed with its abode. The hunting of the chamois is very difficult, and laborious. The moſt uſual way is by hiding behind ſome of the clefts of the rocks, and ſhooting them as they paſs; for this method the ſportſman is obliged to take great precaution in concealing himſelf; obſerving, at the ſame time, to keep the wind in his face. Others hunt this animal as they do the ſtag, by placing ſome of the hunters at all the narrow paſſages, while others beat round to alarm the game. Men are more proper for this ſort of hunting than dogs, who when employed, often diſperſe the chamois too ſoon, when they immediately fly to a conſiderable diſtance; the men alſo find it a dangerous ſport, for when the animal obſerves his retreat ſhut up, he directly makes at the hunter with his head, and frequently knocks him down."

In reſpect to the ſpecific virtues attributed to the blood of the wild goat, in the cure of certain diſeaſes, eſpecially in the pleuriſy, a virtue thought to belong particularly to this animal, and which would indicate it to be of a particular nature, it is now known that the blood of the chamois, and alſo of the domeſtic he-goat, has the ſame properties when fed on the ſame aromatic herbs, which they commonly paſture on; ſo that even by this property theſe three animals appear to be united in the ſame ſpecies.

SUPPLEMENT.

BESIDES the Syrian Goat, which we formerly mentioned as having pendulous ears, there is a ſpecies in Madagaſcar, which are much larger, and with pendulous ears ſo long, that they hang entirely over their eyes, which obliges the animal to be in the almoſt continual motion of throwing them back, and therefore whenever purſued, he invariably makes to the riſing ground. The accounts which we received of this animal came from M. Comerſon, but were not ſufficiently particular to determine whether it was a different ſpecies or only a variety of the Syrian race with pendulous ears.

M. le Vicomte de Querhöent ſays, that the goats left on Aſcenſion Iſland have encreaſed abundantly, but they appear very thin, and ſo weak, that men can often outrun them; they are of a very dark brown, much leſs than our goats, and in the nights conceal themſelves in the holes of the mountains.

THE SAIGA.

THERE is a ſpecies of goat found in Hungary, Tartary, and in South Siberia, which the Ruſſians call *Seigah*, or *Saiga*; it bears a reſemblance to the domeſtic goat in the ſhape of its body and in its hair; but by the form of the horns, and the want of a beard, it approaches nearer to the antelopes, and, in fact, appears to be the ſhade between thoſe two animals; for the horns of the ſaiga are in every reſpect like thoſe of the antelope; they have the ſame form, tranſverſe rings, longitudinal ſtreaks, &c. and they differ only by the colour. The horns of the antelopes are black and opaque; on the contrary, thoſe of the ſaiga are whitiſh and tranſparent. Geſner has mentioned this animal under the name of *colus*, and Gmelin that of *ſaiga*. The horns which are in the royal cabinet, were ſent under the denomination of *the horns of the Hungarian buck*; they are ſo tranſparent and ſo clear, that they are uſed for the ſame purpoſe as tortoiſe-ſhell.

The ſaiga, by its natural habits, reſembles more the antelopes, than the wild or chamois goats; for it does not delight in mountainous countries, but lives on the hills and plains. Like them alſo he moves by bounds and leaps; he is very ſwift, and his fleſh much better eating than that of either the tame or wild goat.

THE GAZELLES, OR ANTELOPES.

THERE have been thirteen ſpecies, or, at leaſt, thirteen diſtinct varieties made of theſe animals; in this uncertainty, whether they are varieties, or ſpecies, we thought it beſt to treat of them all together, aſſigning to each a particular name. The firſt of theſe animals, is the common *gazelle (fig. 153.)* which is found in Syria, Meſopotamia, and the other provinces of the Levant, as well as in Barbary, and in all the northern parts of Africa. The horns of this animal are about a foot long, entirely annulated at the baſe, leſſening into half rings towards the extremities which are ſmooth. They are not only ſurrounded with rings, but alſo furrowed longitudinally by ſmall ſtreaks. Theſe rings mark the years of their growth, which is commonly about twelve or thirteen. The gazelles in general, and this tribe in particular, greatly reſemble the roe-buck in the proportions of the body, natural functions, ſwiftneſs, and the brightneſs and beauty of the eyes. Theſe reſemblances would tempt us to think, as the roe-buck does not exiſt in the ſame countries with the gazelle, that the latter was only a degeneration of the firſt; or, that the roe-buck is a gazelle, whoſe nature had been altered by the influence of the climate and effects of food, did not the gazelles differ from the roe-buck in the nature of their horns; thoſe of the roe-buck, are a kind of ſolid *wood* which fall off, and are renewed every year, like thoſe of the ſtag; the horns

of

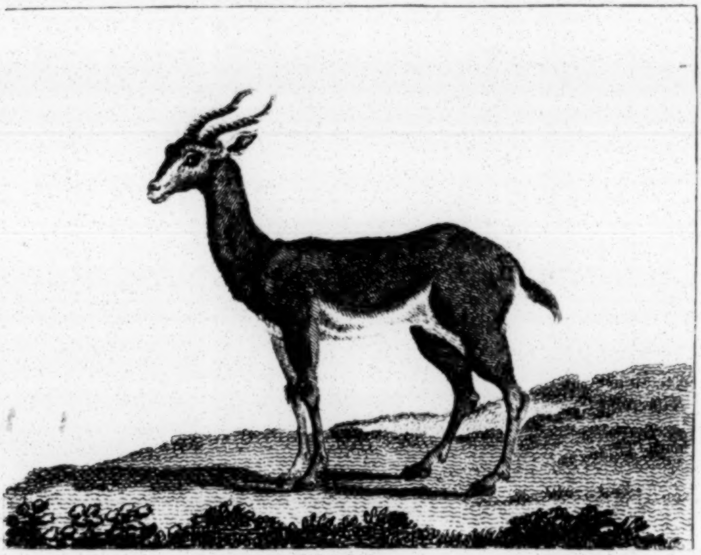

FIG.153

Gazelle

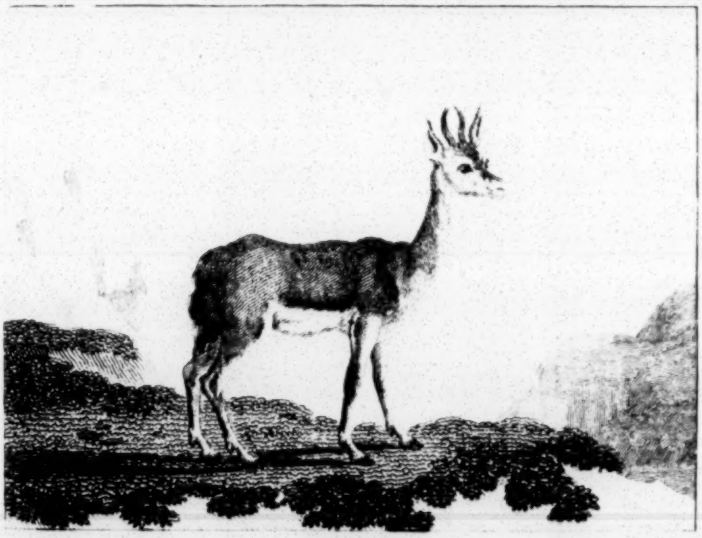

FIG.154

Corine

of the gazelles on the contrary, are hollow and permanent like thoſe of the goat. The roe-buck has alſo no gall bladder, which is to be found in the gazelle. The gazelles have, in common with the roe-bucks, deep pits under the eyes, and they reſemble each other ſtill more in the colour and quality of the hair, in the bunches upon their legs, which only differ in being upon the fore-legs of the gazelle, and upon the hinder legs of the roe-buck. The gazelles, therefore, ſeem to be intermediate animals between the roe-bucks and goats; but, when we conſider that the roe-buck is an animal which is to be found in both continents, and that the goats, on the contrary, as well as the gazelles belong only to the old world, we ſhall be induced to conclude that the goats and gazelles are more nearly related to each other, than they are to the roe-buck. The only characters peculiar to the gazelles, are the tranſverſed rings and longitudinal depreſſions on the horns, the bunches of hair on the fore-legs, the thick ſtreaks of black, brown, or red hair upon the lower part of the ſides, and three ſtreaks of whitiſh hair in the internal ſurface of the ears.

The ſecond gazelle is an animal found in Senegal, which M. Adanſon informs us, is there called *kevel*. It is ſomething leſs than the former, and nearly of the ſize of a ſmall roe-buck; it differs alſo in its eyes, which are much larger; and its horns, inſtead of being round, are flattened on the ſides, and this difference is in general with both males and females, the horns in one ſpecies being flat and the other round; as for other reſpects, they entirely reſemble each other. They both have yellow coloured hair, thighs and belly white, the tail black, a brown ſtripe under the flank, three white ſtreaks in the ears, black horns ſurrounded with rings, with the longitudinal depreſſions, &c.; but it is certain that the number of theſe rings is greater in the kevel than in the gazelle, the laſt having generally but twelve or thirteen, and the former at leaſt fourteen, and often eighteen or twenty.

The third is called *corine (fig.* 154.*)* from *korin*, the name it bears in Senegal. It greatly reſembles the gazelle and the kevel, but is ſtill leſs than either; its horns are alſo thinner and ſmoother, the rings being ſcarce diſcernible. M. Adanſon, who communicated to me his deſcription of this animal, ſays, that it ſeemed a little tending to the chamois goat, but that it is much ſmaller, being in length only two feet and an half, and not quite two feet in height; and its ears are four inches and an half long, its tail three inches, its horns ſix inches long, and not an inch thick; that they are two inches diſtant from each other at the baſe, and about five or ſix at their extremities; that, inſtead of annular prominences, they have only tranſverſe wrinkles, very cloſe to each other in the lower part, and more diſtant at the upper, and that theſe wrinkles, which are in the place of rings, are about ſixteen in number; that its hair is ſhort, fine, and gloſſy, yellow on the back and flanks, and white under the belly and the inſide of the thighs; and that there are ſome of theſe animals whoſe bodies are often ſprinkled with irregular white ſpots.

Theſe differences between the gazelle, the kevel, and the corine, although very apparent, eſpecially in the corine, do not appear to be eſſential, nor ſufficient to divide theſe animals into different ſpecies; for they reſemble each other ſo much in every other reſpect, that they ſeem to be all three of the ſame ſpecies, more or leſs varied by the influence of climate and food. There is much leſs difference between the kevel and the gazelle, than the corine, whoſe horns bear no reſemblance to thoſe of the other two; but all three have the ſame natural habits;

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they aſſemble and feed together in herds; they are of mild diſpoſitions, and eaſily accuſtomed to a domeſtic ſtate, and the fleſh of all three is very good to eat. We think ourſelves authoriſed, therefore, to conclude, that the gazelle and kevel are certainly of the ſame ſpecies, and that it is uncertain, whether the corine is only a variety of the ſame ſpecies, or whether it is a different one.

In the royal cabinet of France, there are ſkins of theſe three different antelopes, beſides which is a horn that bears a great reſemblance to thoſe of the gazelle and kevel, but much larger; this horn is engraved in the works of Aldrovandus, *Lib.* I. *de Biſulcis*, c. xxi. Its thickneſs and length ſeem to indicate a much bigger animal than the common gazelle, and it appears to me to belong to an antelope which the Turks call *tzeiran*, and the Perſians *ahu*. This animal, according to Olearius, in ſome meaſure reſembles our fallow-deer, except being rather of a red than a yellow colour; the horns, likewiſe, are without antlers, and reſt upon the back, &c. M. Gmelin, who deſcribes it under the name of *dſheren*, ſays, it reſembles the roe-buck, with this exception, that the horns are like thoſe of the wild-goat, are hollow, and never fall off. He alſo adds, that in proportion as the horns increaſe in growth, the cartilage of the larynx thickens and forms a conſiderable prominence under the throat when the animals are advanced in years. According to Kœmpfer the *ahu* differs not in the leaſt from the ſtag in its form, but that his horns approach nearer thoſe of the goat, which are ſingle, black, and annulated, as far as the middle, with rings, &c. Some other authors have likewiſe made mention of this ſpecies of antelope under the names of *geiran* and *jairan*, which it is eaſy to reſtore, as well as that of *dſheren*, to the primitive name of *tzeiran*. This antelope is common in South Tartary, in Perſia, and is alſo to be met with in the Eaſt Indies.

To theſe four firſt ſpecies, or races of antelopes, may be added two other animals, which greatly reſemble them; the firſt is called *koba* at Senegal, where the French have ſtiled it the *great brown cow*; the ſecond, which we call *kob*, is alſo a native of Senegal, and which the French have denominated the *ſmall brown cow*. The horns of the kob greatly reſemble thoſe of the gazelle and kevel, but the ſhape of the head is different, the muzzle is longer, and there are no pits under the eyes. The koba is much larger than the kob; the latter is about the ſize of the fallow-deer, and the other is as large as the ſtag. By the remarks of M. Adanſon, it appears, that the *koba* is five feet long, from the extremity of the muzzle to the riſe of the tail; that its head is fifteen inches, its ears nine, and its horns from nineteen to twenty; that its horns are flatted on the ſides, and ſurrounded with ten or twelve rings, while thoſe of the *kob* have only eight or nine, and are not more than a foot in length.

The ſeventh animal of this ſpecies is found in the Levant, but more commonly in Egypt, and in Arabia. We call it, from its Arabian name, *algazel*; this is ſhaped pretty much like the other antelopes, and is nearly the ſize of the fallow-deer, but its horns are long, thin, and but little bent till toward their extremities, when they turn ſhort with a ſharp flexion; they are black, and almoſt ſmooth, and the annular prominences ſcarcely obſervable, except towards the baſe, where they are a little more viſible. They are about three feet in length, while thoſe of the gazelle are not more than one foot, thoſe of the kevel fourteen and fifteen inches, and thoſe of the corine (which, nevertheleſs, reſembles this the moſt) only ſix or ſeven inches.

The eighth animal is generally called the *Bezoar antelope*, but by the eaſtern nations *paſan*, which name we retain. The horns of this animal are very well repreſented in the German Ephemerides, and the figure of the animal itſelf has been given by Kœmpfer, but which is faulty in the horns, being neither ſufficiently long nor ſtraight. His deſcription, likewiſe, does not appear to be exact, for he ſays, that this animal has a beard like the he-goat; notwithſtanding, he has given a figure of it without one, which ſeems more conformable to truth; for the want of a beard is the principal character by which antelopes are diſtinguiſhed from goats. This antelope is of the ſize of our domeſtic he-goat, and has the colour, ſhape, and agility of the ſtag. We have ſeen a ſkull of this animal with the horns thereon, and two other horns ſeparate. The horns which are engraved in *Aldrovandus, de quad. Biſulcis*, bear a great reſemblance to theſe. In moſt reſpects, the *algazel* and the *paſan* appear to have a great affinity; they are alſo natives of the ſame climate, and are found in the Levant, Egypt, Arabia, and Perſia; but the algazel feeds upon the plains, and the paſan is only found on the mountains. The fleſh of both is very good food.

The ninth antelope is an animal which, according to M. Adanſon, is called *nangueur*, or *nanguer (fig.* 155.*)* at Senegal. It is three feet and an half long, two feet and an half high; it is of the colour of the roe-buck, yellow on the upper part of the body, white under the belly and inſide of the thighs, with a ſpot of the ſame colour under the neck. Its horns are permanent like thoſe of the other antelopes, and are about ſix or ſeven inches in length; they are black and round, but what is ſingular, near the points they bend forwards, nearly as thoſe of the chamois goats bend backwards. Theſe nanguers are very beautiful animals, and very eaſy to tame. All theſe characters, and principally that of the horns bending forward, induces me to think, that the nanguer may poſſibly be the dama, or fallow-deer, of the ancients. "Cornua rupicapris in dorſum adunca, damis in adverſum," ſays Pliny. As theſe are the only animals who have their horns bent in this manner, we may preſume, that the nanguer of Africa, is the dama of the ancients; eſpecially, as Pliny ſays in another place, that the dama is only to be found in Africa. In ſhort, by the teſtimonies of other ancient authors, we find, that the dama was a timid and peaceable animal, who had no other reſource for his ſafety than in the ſwiftneſs of his running. The animal which Caius has given the figure and deſcription of, under the name *dama Plinii*, being found, according to that author's own teſtimony, in the north of Great Britain, and in Spain, cannot poſſibly be the dama mentioned by Pliny, becauſe he ſays, it was only to be found in Africa. Beſides, this animal, which Caius has deſcribed, is furniſhed with a beard like a goat, and not one of the ancients has ſpoken of the dama as having a beard. I am led to believe, therefore, that this dama of Caius is only a goat, whoſe horns being a little bent at their extremities, like thoſe of the common gazelle, made him imagine it to be the dama of the ancients. Furthermore, this character of the horns being bent forwards, which is the moſt certain index of the dama, is not properly marked in any other animal than the nanguer of Africa. By the remarks of M. Adanſon, it appears, there are three varieties of theſe nanguers, which only differ in colour of the hair, but all their horns bend forwards in a greater or leſſer degree.

The tenth gazelle is a very common animal in Barbary and Mauritania, and the Engliſh have given it the name of the *antelope*, which we ſhall likewiſe adopt. This animal is of the ſize of a roe-buck, and greatly reſembles the gazelle and the kevel, yet differs from them in ſo many particulars, that it is looked upon as a different ſpecies. The antelope has deeper eye-pits than the gazelle ; its horns are near fourteen inches long, almoſt touching each other at the bottom, yet their points are fifteen or ſixteen inches aſunder. They have the annular prominences like the gazelle and kevel, yet not ſo diſtinguiſhable ; but what particularly diſtinguiſhes the antelope, is its horns having a double flexion, which gives them the appearance of an antique lyre. The antelope, like other gazelles, is yellow on the back, and white under the belly ; but theſe two colours are not ſeparated by the black ſtreak which is to be found in all the reſt of the gazelle kind.

There ſeems to be different races of the antelope, as there are in the other gazelles, 1. In the royal cabinet is a horn, which can only be attributed to a much larger antelope than that we have been ſpeaking of ; it is called *lidmée*, a name, according to Dr. Shaw, the Africans give to the antelopes. 2. In the cabinet of the Marquis de Marigny is a kind of an offenſive weapon, compoſed of two ſharp-pointed horns about the length of a foot and half, which, by their double flexion, ſeem to belong to a much ſmaller antelope than any of the reſt. It muſt be very common in the Indies, as their Faquirs, and other prieſts, carry this ſort of weapon as a mark of dignity. We ſhall call it the *Indian antelope*, from its having the appearance of being only a ſimple variety of the *African ſpecies*.

By this enumeration of the gazelles, or antelopes, we find there are twelve ſpecies, or diſtinct varieties, in the gazelles: 1. The common gazelle; 2. The kevel; 3. The corine; 4. The tzerain, 5. The koba, or great brown cow; 6. The kob, or ſmall brown cow; 7. The algazel, or antelope of Egypt; 8. The paſan, or pretended bezoar; 9. The nanguer, or dama of the ancients; 10. The antelope; 11. The lidmée; and, 12. The Indian antelope. After having carefully compared them, we are induced to conclude that the common gazelle, kevel, and corine, are only three varieties of one ſpecies: 2. That the tzeiran, koba, and kob, are varieties of another: 3. That the algazel and the paſan are probably only two varieties of the ſame ſpecies; and that the name *bezoar, gazel*, which has been given to the paſan, is no diſtinctive character; for we think ourſelves able to prove, that the Oriental bezoar does not come from the paſan alone, but from all the gazelles and goats which live in the mountains of Aſia: 4. That the nanguers, whoſe horns are bent forwards, and of which there are two or three varieties, have been indicated by the ancients under the name of the *dama:* 5. That the antelopes, which are three or four in number, and differ from all others by the double flexion of their horns, were alſo known to the ancients by the names of *ſtrepſiceros*, and *addax*. All theſe animals are to be found in Aſia and Africa. To theſe five principal ſpecies, which contain twelve very diſtinct varieties, we ſhall not add two or three other kinds, of America, to which the indefinite name of *gazelle* has alſo been given, although they are different from all thoſe we have already noticed; as it would only increaſe the confuſion, which is already too great. We ſhall give the hiſtory of theſe American animals, under their real names of Mazame, Temamazame, &c. and ſhall here ſpeak only of thoſe animals of this ſpecies which are found in Africa and Aſia: we ſhall alſo refer to the following articles, ſeveral other animals of Africa and Aſia, which have been conſidered as antelopes or goats, though they appear to be an intermediate ſpecies; ſuch as the bubalus, or Barbary cow, the condoma, the guib, the grimm, &c. without including the chevrotains, which greatly reſemble the ſmall goats or antelopes, but of which we ſhall ſpeak in a ſeparate article.

It is now eaſy to perceive how difficult it was to arrange all theſe animals, which are thirty in number, ten goats, twelve or thirteen antelopes, three or four of the bubalus, and as many chevrotains; many of them were unknown, the others confuſedly mentioned by naturaliſts, and confounded one for another by travellers. This is the third time that I have written their hiſtory, and I muſt ſay, that the trouble much exceeded the produce, though I have done as much as poſſible with the materials and knowledge I was able to acquire.

By comparing the remarks which have been made by ancient and modern authors, with the knowledge we have acquired by experience, we find, 1. That the animal mentioned by Ariſtotle is not the gazelle but the roe-buck; notwithſtanding the name given by Ariſtotle has been uſed by Ælian, not only to denote wild goats in general but particularly the Lybian gazelle. 2. That the *ſtrepſiceros* of Pliny, or the *addax* of the Africans, is the antelope. 3. That the *dama* of Pliny is the *nanguer* of Africa, and not our fallow-deer, or any other European animal. 4. That the τςοξ of Ariſtotle agrees with the *zorces* of Ælian, and is the ſame with the *platyceros* of the more modern Greeks, which name the Latins have adopted to denote the fallow-deer, "*Animalium quorundam cornea in palmis finxit natura digitoſque emiſit ex iis unde platycerotas vocant*," ſays Pliny. 5. That the pygargus of the Greeks is probably the gazelle of Egypt, or that of Perſia; that is, the *algazel* or *paſan*. The word *pygargus* is only uſed by Ariſtotle to denote a bird, the *white-tailed eagle*; but Pliny employed it to denote a quadruped. The etymology of pygargus indicates, 1. An animal with white thighs, ſuch as the roe-bucks or gazelles. 2. A timid animal; the ancients imagining that white thighs were an index of timidity, attributed the intrepidity of Hercules to his having black ones. But as almoſt every author, who ſpeaks of the pygargus as a quadruped, mentions alſo the roe-buck; it is clear that the name can only be applied to ſome ſpecies of gazelle, which is different from the dorcas Lybica, or common gazelle, and from the ſtrepſiceros, or antelope, which the ſame authors ſpeak of. We are, therefore, induced to conclude,

clude, that the *pygargus* denotes the *algazel* or *gazelle* of Egypt, which muſt have been known to the Greeks as well as to the Hebrews; for we find the name of pygargus in the Septuagint verſion *, among the number of animals whoſe fleſh is deemed clean; the Jews, therefore, eat the pygargus, or that ſpecies of gazelle which is common in Egypt and the adjacent countries.

Mr. Ruſſel, in his Hiſtory of Aleppo, ſays, that near that city there are two ſorts of gazelles; the one called the *mountain gazelle*, which is the moſt beautiful, and whoſe hair on the neck and back is of a deep brown; the other, called the *gazelle of the valley*, is neither ſo ſwift nor ſo well made as the firſt, and whoſe hair is alſo much paler. He adds, that theſe animals run ſo quick and ſo long that the ſwifteſt dogs cannot take them, without the aſſiſtance of a falcon; though in winter the gazelles are lean, their fleſh is of a good flavour; that in ſummer it abounds with fat, like our veniſon; and that thoſe which are fed at home are not ſo good eating as the wild ones. By this teſtimony of Mr. Ruſſel, and by that of M. Haſſelquiſt, we may perceive that the gazelles of Aleppo are not the common gazelles, but thoſe of Egypt, whoſe horns are ſtraight, long, and black, and whoſe fleſh is excellent eating. We find alſo that they are half domeſtic animals, which formerly were often tamed; conſequently many different varieties or kinds have been formed among them, as well as in other domeſtic animals. Theſe Aleppo gazelles are the ſame as thoſe we have called algazells, and are ſtill more abundant in Upper Egypt than in the environs of Aleppo. They feed on aromatic herbs and the tender bark of young trees: they are commonly found in herds, or rather in families, conſiſting of five or ſix. Their cry reſembles that of the goat. They are hunted not only with dogs, aſſiſted by the falcon, but alſo with the *ounce* *.

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* Deuteronomy, chap. xiv.

In ſome places they take the wild gazelles by means of a tame one, to the horns ofwhich they faſten a ſnare made of ropes. When a herd of wild gazelles is found the tame one is ſent among them, but he no ſooner approaches than one of the males of the wild herd advances to oppoſe him, and in butting with his horns is ſoon entangled in the nooſe. In this ſtruggle they both commonly fall to the ground, when the hunter coming up kills the one and diſengages the other.

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* See hiſtory of this animal, page 68, vol. VII.

The antelopes, eſpecially the largeſt ſort, are much more common in Africa than in India, they are ſtronger and fiercer than the other gazelles, from which they are eaſily diſtinguiſhed by the double flexion of their horns; and not having either the black or brown ſtreak on their ſides. The middling antelopes are about the ſize of the fallow-deer; their horns are very black, their belly very white, and their fore-legs ſhorter than the hind ones. They are well made, and extremely clean animals, never lying down but in dry places; they are likewiſe very ſwift, watchful, and apprehenſive of danger; in open places they look round, and when they ſee a man, a dog, or any other enemy, they fly with all ſpeed. But, notwithſtanding this natural timidity, they have a kind of courage, for if ſurpriſed, they turn ſhort round, and face thoſe who attack them with great firmneſs.

The antelopes, in general, have large black eyes, very brilliant, and ſo beautiful, that the Greeks employ them proverbially, in praiſing the eyes of their miſtreſſes. A gazelle-eyed beauty is the higheſt compliment a lover can pay. Their limbs are finer and more delicate than the roe-buck; their hair is ſhort, ſoft, and gloſſy; their hind legs are longer than thoſe before, like the hare, which gives them greater ſecurity in aſcending than in deſcending ſteep places. Their ſwiftneſs is equal to that of the roe-buck; but the latter haſtens on by bounds, while the former run in an uninterrupted courſe. Moſt of them are yellow upon the back, white under the belly, with a black ſtripe which ſeparates theſe two colours below the flanks. Their tails are of various lengths, but all covered with pretty long blackiſh hair, their ears are long, erect, open, and terminating in a point; they all have cloven hoofs nearly like the ſheep; both males and females have permanent horns, but the latter has them thinner and ſhorter than the former.

This is all the knowledge we have been able to acquire concerning the different ſpecies of gazelles, and their natural diſpoſitions and habits. Let us now ſee how far naturaliſts have been right in attributing the production of the oriental *bezoar* to one kind of thoſe animals only; and whether this animal be really the *paſan* or *pazan*, which they have deſcribed by the name of the *Bezoar Gzael.* In examining the deſcription and the figures of Kœmpfer, who has written a great deal on this ſubject, it is doubtful whether he means that the pazan or the algazel is the only animal which produces the oriental bezoar. If we conſult other naturaliſts and travellers, we ſhall be tempted to believe that this ſtone is the production not only of gazelles but of wild and domeſtic goats, and even ſheep, the formation of which probably depends more on the temperature of the climate, and the quality of the food, than on the nature or the ſpecies of the animal. If we believe Rumphius, Seba, and ſome other authors, the true oriental bezoar is the production of apes and not of gazelles, goats, or ſheep. But this opinion of Rumphius and Seba is not founded on a proper baſis, for we have ſeen many of theſe concretions, to which the name of ape bezoar has been given, but they are quite different from the oriental bezoar, which is certainly produced by a ruminating animal, and is eaſily diſtinguiſhed from all other bezoars by its ſhape, ſubſtance, and colour, which is generally that of an olive, and brown within, while the *occidental* bezoar is of a pale yellow. The ſubſtance of the firſt is ſoft and porous; that of the laſt hard, dry, and more petrified. Beſides, as prodigious quantities of the oriental bezoar was conſumed in the laſt century; and ſince it was uſed in Europe and Aſia for all caſes in which our preſent phyſicians give cordial medicines, and other antidotes againſt poiſon, may we not preſume, from the great quantities which were formerly, and are ſtill, in ſome degree, conſumed, that this ſtone is produced, not from a ſingle ſpecies of animal but from many, and that it is equally the production of gazelles, goats, and ſheep, who cannot produce it but in certain climates of the Levant and Indies.

Among all the writings on this ſubject we have not met with one diſtinct obſervation, nor a ſingle deciſive argument. It only appears, by what Monard, Garcias, Cluſius, Aldrovandus, and others, have ſaid, that the oriental bezoar animal is not the common and domeſtic goat, but a ſpecies of wild goat they have not characteriſed. Thus, likewiſe, all that can be gathered from Kœmpfer is, that the bezoar animal is a kind of wild goat, or rather gazelle, and as badly deſcribed; but by the teſtimonies of Thevenot, Chardin, and Tavernier, it ſeems that this ſtone is obtained more from ſheep and wild or domeſtic goats, than from gazelles. What gives great weight to the aſſertions of theſe travellers is, that they ſpeak from being eye-witneſſes of the facts, and becauſe, although they do not mention the gazelles on this occaſion, there is no appearance of their being deceived, as they knew them perfectly well, and mention them in other parts of their works. We muſt not, therefore, conclude, with our ancient naturaliſts, that the oriental bezoar is excluſively the production of a particular ſpecies of gazelle, for I muſt own, that after having examined not only the teſtimonies of authors, but ſuch facts as might decide the queſtion, I am inclined to believe, that this ſtone proceeds equally from the greateſt number of ruminating animals, but more commonly from goats and gazelles. This ſtone is formed of concentric layers, and often contains foreign matter in its centre. I have endeavoured to find out the nature of this matter, which ſerves as a nucleus to the bezoar, ſuppoſing from that a judgment might be formed of the animal that poſſeſſes them. This nucleus is of various kinds; ſometimes I found them to conſiſt of pieces of flint, ſtones of plumbs, tamarinds, ſeeds of caſſia, and particularly pieces of ſtraw and buds of trees, therefore I could not heſitate to attribute this production to thoſe animals which brouze upon ſhrubs and leaves.

The oriental bezoar clearly then is not the production of one particular animal but of many different ones; and it is not difficult to reconcile the teſtimonies of moſt travellers with this opinion. The ancients, both Greeks and Latins, had no knowledge of the bezoar. Galen is the firſt who ſpeaks of its virtues as an antidote againſt poiſon. The Arabs, likewiſe, praiſe the bezoar as poſſeſſing thoſe qualities; but neither the Greeks, Latins, nor Arabians, particularly deſcribe the animals which produce it. Rabi Moſes, an Egyptian, only ſays, that ſome pretend this ſtone is formed in the angles of the eyes, and others in the gall-bladder of the eaſtern ſheep. Indeed there are bezoars, or, more properly, concretions, formed in the eyes of ſtags, and ſome other animals; but theſe concretions are very different from the oriental bezoar, and all the concretions in the gall-bladder are of a light, oily, and inflammable matter, which bears no reſemblance to the ſubſtance of the bezoar. Andreas Lacuno, a Spaniſh phyſician, ſays, in his Commentaries on Dioſcorides, that the oriental bezoar is extracted from a certain kind of wild goat which feeds in the mountains of Perſia. Amatus Luſitanus confirms Lacuna's remarks, and adds, that this mountain-goat greatly reſembles our ſtag. Monard, who quotes all the three, ſtill more poſitively affirms, that this ſtone is produced from the internal parts of a mountain-goat in India, to which, he ſays, I have affixed the name of *cervi-capri*, becauſe it inclines both to the goat and the ſtag, but its horns, like thoſe of the goat, are very ſimple, and very much bent backwards. Garcias ab Horton ſays, that in Coraſſon, and in Perſia, there is a kind of he-goats, called paſans, and that it is in their ſtomachs the bezoar is formed; that as well as in Perſia it is found in Malacca, and near Cape Comorin, and that in great numbers of the goats killed for the ſubſiſtence of the troops theſe ſtones are found in the ſtomach of thoſe animals. Chriſtopher Acoſta confirms what Garcias and Monard have ſaid, without adding any thing new; in ſhort, not to omit any thing which has a relation to the hiſtorical detail of this ſtone, Kœmpfer, a minute obſerver of Nature, being in the province of Laar, in Perſia, ſays, that he went with the natives of that country to hunt the *paſan*, which produces the bezoar, and that he ſaw them extract that ſtone; beſides which, he affirms, that the true oriental bezoar proceeds from this animal; that the buck *abu*, of which he has alſo given a figure, produces the bezoar, but that they are of a very inferior quality. By his figures of the paſan and abu we might be induced to believe, that the firſt repreſents the common gazelle rather than the true paſan; and from his deſcription we might imagine his paſan to be an he-goat and not a gazelle, as he gives it a beard reſembling that of the goat; and from the name *abu*, which he gives to his other buck, as well as by his ſecond figure, we might rather ſuppoſe it to be the wild goat than the true abu, which is our tzeiran, or large gazelle. What is yet more ſingular, Kœmpfer, who ſeems willing to decide the ſpecies of animal that produces the oriental bezoar, and affirms, that it is the wild buck called the paſan, quotes, at the ſame time, a man, whoſe word, he ſays, may be relied on, who felt the bezoar ſtones in the belly of the gazelles of Golconda. Thus the poſitive concluſions that can be drawn from Kœmpfer is, that there are two kinds of wild goats, the paſan and ahu, which produce the bezoar in Perſia, and that in the Indies this ſtone is likewiſe found in the gazelles.

Chardin poſitively ſays, that oriental bezoar is found in the wild and domeſtic goats on the ſhore of the Perſian gulph, and in many provinces of India; and that in Perſia it is alſo to be met with in ſheep. Dutch travellers ſay the ſame; Tavernier ſtill more poſitively affirms, that they are found in the ſtomachs of domeſtic goats, whoſe hair is as fine as ſilk, and that having bought ſix of theſe goats alive, he extracted from them ſeventeen bezoar ſtones, and a portion of another, about the ſize of half a nut, and then adds, that there are other bezoars ſuppoſed to proceed from apes, the virtues of which are ſtill greater than thoſe of the goats; that there is alſo cow bezoar, but the virtues are inferior to the others, &c. What can we infer from ſuch a variety of opinions and teſtimonies? What can we conclude from them? unleſs it be admitted that the oriental bezoar proceeds not from one ſingle ſpecies but from many different animals, particularly gazelles and goats.

With reſpect to the occidental bezoar, we can affirm they proceed neither from goats nor gazelles, for we ſhall prove there is neither of them, nor even any animal of that genus, in all the extent of the new world. Inſtead of gazelles we only meet with roe-bucks in the woods of America; inſtead of wild goats and ſheep, lamas and pacos, animals of a quite different nature are ſeen on the mountains of Peru and Chili, of which we have already treated. The ancient Peruvians had no other cattle, and, at the ſame time, that theſe two ſpecies were almoſt reduced to a domeſtic ſtate, they ſubſiſted in much greater numbers in their natural condition of liberty upon the mountains. The wild lamas were called *huanacues*, and the pacos *vicunnas*; from whence the French have derived the name of *vigogne*, which denotes the ſame animal as the pacos; both the pacos and the lamas produce bezoars, but the tame ones more ſeldom than the wild.

M. Daubenton, who has more narrowly inſpected into the nature of bezoar ſtones than any other perſon, thinks they are compoſed of a like matter to that which faſtens itſelf to the teeth of ruminating animals in form of a ſhining tartareous matter; and it is evident, from the collection of bezoars, of which there are a great number in the royal cabinet, that there are eſſential differences between the oriental and occidental bezoars. Thus the Eaſt-Indian goats, or the gazelles of Perſia, are not the only animals which produce concretions, called by the name of bezoar, for the chamois, and, perhaps, the wild goat of the Alps, the he-goats of Guinea, and many animals of America, afford this ſubſtance; and, if we comprehend under this name all concretions of this nature, which are met with in different animals, we may be aſſured, that moſt quadrupeds, excepting carnivorous ones, and even crocodiles and alligators, produce bezoars.

To form, therefore, a clear idea of theſe concretions it will be neceſſary to divide them into ſeveral claſſes, and fix them to the animals which produce them, and the climates and food which moſtly aſſiſt their production.

Firſt, then, the ſtones formed in the bladder and kidnies of men, and other animals, muſt be held diſtinct from the claſs of bezoar, and deſcribed by the name of *calculi*, their ſubſtance being quite different from that of the bezoars; they are eaſily known by their weight, their urinous ſmell, and their ſtructure, which is not regular, nor formed with concentric layers, like that of the bezoar.

2. The concretions that are often found in the gall-bladder, and liver, of the human ſpecies, and other animals, muſt not be regarded as bezoars; they may eaſily be diſtinguiſhed by their lightneſs, colour, and inflammability; beſides they are not formed by layers encircled round a nucleus.

3. The balls frequently found in the ſtomachs of animals, and eſpecially in thoſe that ruminate, are not true bezoars. Theſe balls, which are called *ægagropili*, are compoſed internally of

the hair the animal has licked off his hide and ſwallowed, or from hard roots, which he could not digeſt; their external part is encruſted with a viſcous ſubſtance, ſomething like that of the bezoar. The *ægagrepili*, therefore, have nothing in them, except this external layer, in common with the bezoar, and a ſingle inſpection is ſufficient to diſtinguiſh one from the other.

4. *Ægagropili* are often found in the animals of temperate climates, but never any bezoars. Our oxen and cows, the Alpine chamois, and the hog of Italy, produce only *ægagropili*. Animals of hotter countries, on the contrary, only produce bezoars. The elephant, the rhinoceros, the goats, the gazelles of Aſia and Africa, the lama of Peru, and others, produce, inſtead of *ægagropili*, ſolid bezoars, whoſe ſubſtance and ſize vary according to the difference of the animals and the climates in which they live.

5. The bezoars, to which ſuch virtues and properties have been attributed, are the oriental kind, which, as we have ſaid, proceeds from goats, gazelles, and ſheep, which feed on the mountains of Aſia. The bezoar of an inferior quality, which is called *occidental*, proceeds from the lamas and pacos, which are found in

the mountains of South America. In a word, the goats and gazelles of Africa alſo produce bezoars, but not of ſo good a quality as thoſe of Aſia.

From all theſe facts we may conclude, that, in general, the bezoar is only a reſidue of vegetable nutriment which is not to be found in carnivorous animals, and is peculiar to thoſe who feed on plants; that in the ſouthern mountains of Aſia, the herbs being ſtronger than in any other part of the world, the bezoar, which is the reſidue of that food, has alſo more virtues than any other; that in America, where the heat is leſs, and the mountain herbs being weaker, the bezoars produced there are alſo inferior; and that in Europe, where the herbs are ſtill weaker, and in all the vallies of both continents, where they are coarſe, no bezoars are produced, but only *ægagropili*, which contain nothing but hair, roots, or filaments, which the animal was unable to digeſt.

THE BUBALUS, AND OTHER ANIMALS WHICH HAVE AN AFFINITY TO THE GAZELLES AND GOATS.

WE have already taken notice, in our deſcription of the Buffalo, of the name Bubalus being improperly applied to that animal. This name belonged formerly to the animal in queſtion, which is of a very diſtant nature from the baffalo. It reſembles the ſtag, the gazelle, and the ox, in many reſpects; to the ſtag, by the ſize and ſhape of its body and legs in particular; but its horns are permanent, and nearly like thoſe of the largeſt gazelles, to which it has an affinity both in this character and in its natural habits; its head, however, is much longer than that of the gazelles, or even that of the ſtags. He reſembles the ox by the length of the muzzle and the diſpoſition of the bones of the head, the *cranum* not advancing beyond the *os frontalis:* theſe different marks of conformation, joined to its ancient name, being forgotten, is the reaſon why it has obtained the ſeveral names of *buſelaphus,* the bull-ſtag, *bucula-cervina*, the cow-hind, the Barbary cow, &c. Even the name of *bubalus* comes from *bubulus*, and has been applied to this animal from its ſimilitude to the ox.

The head of the bubalus is narrow and very long, the eyes are placed very high, the forehead very ſhort and narrow, the horns permanent, black, thick, and very cloſely annulated: they are cloſe to each other at the root, but ſpread very diſtant at their extremities; they are crooked backwards, and twiſted like a corkſcrew; his ſhoulders are ſo elevated that they form a ſort of bunch upon the withers; the tail is nearly a foot long, and furniſhed with a bunch of hair at its extremity; and the ears reſemble thoſe of the antelope. Kolbe calls this animal by the name of *elk*, although it only reſembles the elk by its hair being finer at the root, than in the middle or at the points; this character is particular to theſe two animals, for the hair of almoſt every quadruped is thicker at the root than at the middle and point. The hair is nearly of the ſame colour as the elk, though much ſhorter, thinner, and ſofter. Theſe alone are the reſemblances between the bubalus and the elk; in every other reſpect theſe two animals are entirely different. The horns of the elk are larger and heavier than thoſe of the ſtag, and are renewed every year; the bubalus, on the contrary, does not ſhed its horns, but they continue their growth during life, and in form and texture are like thoſe of the gazelles. He reſembles the gazelles alſo by the ſhape of his body, the ſmallneſs of his head, the length of his neck, the poſition of his eyes, ears, and horns, and in the ſhape and length of the tail. The gentlemen of the Academy of Sciences, to whom one of theſe animals was preſented by the name of the *Barbary cow*, and who adopted that denomination, did not heſitate to acknowledge it to be the *bubalus* of the ancients. Though we have rejected this denomination of *Barbary cow*, as equivocal and confuſed, yet as for the reſt, we could not do better than copy the exact deſcription thoſe gentlemen have given of this animal, and by which we perceive it is neither gazelle, goat, cow, elk, nor ſtag, but a particular and diſtinct ſpecies. This animal is alſo the ſame that Caius has deſcribed under the name of *buſelaphus*, and I was ſurpriſed that the gentlemen of the Academy did not make this remark, ſince all the characters which Caius gives to his buſelaphus agree with their Barbary cow.

In the royal cabinet is, firſt, the ſkeleton of a bubalus the gentlemen of the Academy had deſcribed and diſſected, by the name of the Barbary cow. Secondly, a head much larger than that of this ſkeleton, the horns of which are alſo much longer and thicker. Thirdly, a part of another head, with horns as large as the foregoing, but their form and direction are different. There are, therefore, in the bubalus, as well as in the gazelles, antelopes, and others, varieties in the ſize of the body, and in the ſhape of the horns; but theſe differences do not appear to be conſiderable enough to make diſtinct and ſeparate ſpecies.

The bubalus is common in Barbary, and in all the northern parts of Africa; he is nearly of the ſame nature as the antelopes, and has, like them, ſhort hair, black hide, and his fleſh is good to eat.

THE CONDOMA.

THE Marquis de Marigny, who takes every opportunity to encourage arts and ſciences, ſhewed me in his cabinet the head of an animal, which, at firſt ſight, I took to have belonged to a large bubalus. It reſembled thoſe of our largeſt ſtags; but inſtead of ſolid horns, like thoſe of the ſtag, it had two large and hollow ones with a ridge, like thoſe of the he-goat, and double flexions, like thoſe of the antelope. In examining the royal cabinet for what might be relative to this animal, we found two horns; the firſt without any mark or name, came from his Majeſty's wardrobe; the ſecond we had from M. Baurhis, commiſſary of the Marines, with the name of the *condoma* of the Cape of Good Hope affixed to it. This name we have adopted, as the animal which it denotes has never before been deſcribed nor denominated.

By the length, thickneſs, and double flexion of the horns, the condoma approaches very near the *ſtrepſiceros* of Caius; the ſhape and contours of the horns are exactly the ſame, and from which it ſeems reaſonable to preſume that they are the ſame animal, eſpecially if we attend to the following reflection: firſt, Caius was evidently deceived in conſidering this animal as the ſtrepſiceros of the ancients; for the ſtrepſiceros of the ancients is certainly the antelope, whoſe head is very different from that of the ſtag; while Caius affirms, that the head of his ſtrepſiceros is like that of the ſtags; therefore his ſtrepſiceros is not the ſame as that of the ancients. Secondly, the horns of the animal Caius deſcribes, are thick, and more than three feet in length, covered with rugoſities, and not with rings or tubercles; while thoſe of the ſtrepſiceros of the ancients, or antelope, are much thinner and ſhorter, and are furniſhed with rings and tubercles. Thirdly, although the horns of the condoma, which is in the Marquis de Marigny's cabinet, as well as thoſe which came from the wardrobe of the king, have been poliſhed upon the ſurface, it is, nevertheleſs, plainly perceivable, that they never had rings; this is farther demonſtrated by the horns M. Baurhis gave us, which had never been poliſhed, and yet it was rough, like thoſe of the antelope; beſides, Caius himſelf ſays, that the horns of his ſtrepſiceros had only rugoſities, therefore his ſtrepſiceros is not the ſame as that of the ancients, but the animal here ſpoken of, and which, in fact, is furniſhed with every character Caius has given to that which he deſcribes.

In looking over the works of travellers for thoſe marks which might have an affinity with the remarkable ſize of the horns of this animal, we can find none that have a nearer relation belonged to a large bubalus. It reſembled thoſe of our largeſt ſtags; but inſtead of ſolid horns, like thoſe of the ſtag, it had two large and hollow ones with a ridge, like thoſe of the he-goat, and double flexions, like thoſe of the antelope. In examining the royal cabinet for what might be relative to this animal, we found two horns; the firſt without any mark or name, came from his Majeſty's wardrobe; the ſecond we had from M. Baurhis, commiſſary of the Marines, with the name of the *condoma* of the Cape of Good Hope affixed to it. This name we have adopted, as the animal which it denotes has never before been deſcribed nor denominated.

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In looking over the works of travellers for thoſe marks which might have an affinity with the remarkable ſize of the horns of this animal, we can find none that have a nearer relation to it than thoſe of the animal mentioned by Kolbe, under the name of the *wild goat* of the Cape of Good Hope. " The goat, ſays he, to which the Hottentots have not as yet given a name, and which I call the wild goat, is remarkable in many reſpects; it is about the ſize of a large ſtag; its head is very handſome, ornamented with two ſmooth crooked and pointed horns, about three feet long, and at their extremities about two feet aſunder." Theſe characters appear perfectly to agree with the animal in queſtion; but having ſeen no more than the head, we cannot affirm that the reſt of Kolbe's deſcriptions equally agree with it; we, therefore, can only preſume it as a probability, which requires confirmation by future obſervations. Kolbe remarks, that " All along the back there runs a white ſtripe, which ends at the inſertion of the tail; another of the ſame colour croſſes this at the bottom of the neck, which it entirely ſurrounds; there are two more which ſurround the body, the one behind the fore legs and the other behind the hind ones. The colour of the reſt of the body is grey, with ſome reddiſh ſpots, except the belly, which is white; it has alſo a long grey beard, and its legs, though long, are well proportioned."

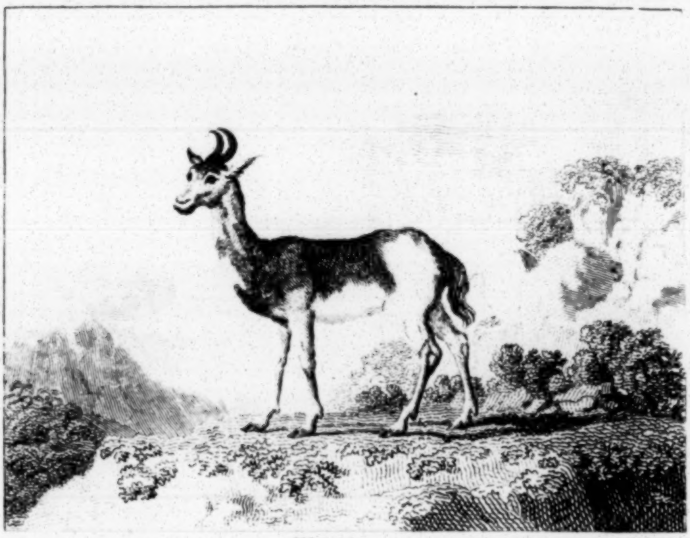

FIG.155

Nanguer

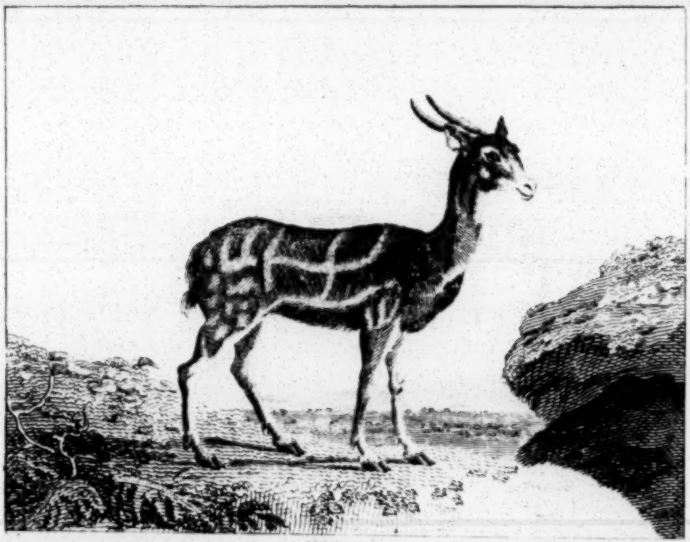

FIG.156

Guib

THE GUIB.

THE Guib *(fig.* 156.*)* is an animal, though not noticed by any naturaliſt or traveller, very common in Senegal, from whence M. Adanſon brought over ſome of their ſkins. It reſembles the gazelles, eſpecially the nanguer, by the ſize and ſhape of its body, by the fineneſs of its legs, by the form of its head and muzzle, by the eyes and ears, by the length of its tail, and by the want of a beard; but every gazelle, eſpecially the nanguer, has the colour of the belly white, while the breaſt and belly of the guib are of a deep brown. It alſo differs from the gazelles by the horns, which are ſmooth, without annular prominences, and have two longitudinal ridges, the one above and the other underneath, forming a ſpiral twiſt from the baſe to the point; they are alſo a little compreſſed. In theſe particulars the guib is more like the goat than the gazelle, nevertheleſs it is neither the one nor the other, but rather an intermediate ſpecies. It is alſo remarkable for white ſtripes on a brown ground, that are diſpoſed along and acroſs the animal's body, as if it were covered with a harneſs. It feeds in company, and they are found in numerous herds in the plains of Podor.

THE GRIM.

THIS animal is only known to naturaliſts by the name of *Grim*, or *Wild Goat of Grimmius*; and which, as we are not acquainted with the name it bears in its own country, we ſhall adopt. We find a figure of this animal in the German Ephemerides, which has been copied in the Academical Collection. Dr. Herman Grimmius was the firſt who mentioned this animal, and what he ſaid of it has been copied by Ray, and afterwards by all the nomenclators. Although his deſcription * is incomplete,

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* This animal, on the back and neck, is of a dark aſh colour, with a white belly, is about a foot and a half in height, on the top of its head between the horns is a tuft of black hair, and between each eye and the noſtrils, there is a cavity filled with a yellow humour, oily, and viſcid, which has ſome reſemblance to caſtor, and muſk, and fills again upon the cavities being emptied. *Grimmius.*

complete, he denotes two characters ſo remarkable, that we can have no doubt that the head of an animal of Senegal, given us by M. Adanſon, belongs to the goat of Grimmius. The firſt is a very deep cavity under each eye, ſo deep indeed, as to leave but a thin partition of bone between the cavities and the partition of their noſe; the ſecond is a tuft of hair ſtanding upright on the top of the head. Theſe are ſufficient to diſtinguiſh the grimm from every other goat or gazelle. It reſembles both, however, not only in the ſhape of its body, but even by its horns, which are annulated towards the baſe, and have longitudinal ſtreaks like thoſe of the gazelles; at the ſame time, they are very ſhort, and bend backwards in an horizontal direction, like the ſmall African goat before mentioned. Beſides, from being much ſmaller, and from having ſhort horns, we are almoſt led to conclude this animal forms the ſhade between the goat and ſmall antelopes.

There is ſome reaſon to think, that the male grim is alone furniſhed with horns; for the individual of which Dr. Grimmius has given the deſcription and figure, had no horns: and the head which M. Adanſon has given us was, on the contrary, ornamented with two, very ſhort, and almoſt concealed by the hair, but yet ſufficiently viſible not to eſcape the notice of the obſerver ; beſides, we ſhall find, in the hiſtory of the chevrotains, or ſmall antelopes, that in the chevrotains of Guinea, the male only has horns, which has made us preſume, that it is the ſame with the grim ſpecies, which in every reſpect approaches nearer the chevrotain, than any other animal.

SUPPLEMENT.

IN the year 1767, M. Voſmaër publiſhed a deſcription of this animal, and which he calls the Small Beautiful Buck of Guinea, and from whom we have extracted the following account: "This was one of the moſt beautiful animals I ever ſaw ; it was ſent from Guinea with thirteen others of both ſexes, but twelve of them died in their voyage to Holland, and thoſe two which ſurvived were males ; theſe were put into the menagerie of the Prince of Orange, and one of them died the following winter, that of 1764. They are remarkably timid animals, and are much frightened at any noiſe, eſpecially at thunder. The one now living, (in 1766) though very wild at firſt, is now ſo familiar, that upon holding a piece of bread to him, and calling him by the name they have given him of *tetje*, he will not only approach but allow himſelf to be ſtroaked. He is a particularly clean animal, and will not ſuffer the ſmalleſt piece of dirt to remain on any part of his body, but is conſtantly ſcratching himſelf with his hind feet. He is very active, and when ſtanding ſtill, keeps one of his fore-legs rather in a bent poſition, which gives him a graceful appearance. He eats bread, rye, carrots, is fond of potatoes, and is a ruminating animal. His horns are rather large in proportion to his ſize, and has a ſmall quantity of hair which riſes to a point between them. He is about the ſize of a young kid of two months old, and his limbs are extremely well proportioned. His head ſomewhat reſembles that of a roe-buck; his noſe is black and naked, but always moiſt; his upper lip appears as if divided; he has no beard but a kind of ſmall whiſkers on the ſides, and a wart covered with hair under his chin; his horns are black, about three inches long, quite ſtraight, and end with a ſharp point, they are furniſhed with three rings, which riſe a little backward; from the black tuft between the horns, there is a ſtripe of that colour down to the noſe; his ears are large, with ſome ſhort hairs on the inſides, and on the tops, but all the other parts of them are black and naked; his eyes are large, and of a deep brown; between the eyes and noſe there are black cavities, from the middle of which a viſcid gummy humour exudes, that ſoon becomes hard and black, but I could never perceive that it contained that odour which Dr. Grimmius and thoſe who have followed him deſcribe it to poſſeſs; the upper part of the neck and the head are of a yellowiſh grey, the back black, the ſides a bright brown, the belly grey, and the limbs white as far as his knees, his legs have a black band, and the hair becomes blackiſh towards the hoofs; he had no heels, his feet were cloven, he had beautiful black pointed hoofs, and his tail was very ſhort and white, with a black band on the upper part."

THE CHEVROTAINS.

WE have given the name of *Chevrotain (tragulus)* to the ſmall animals of the warm regions of Africa and Aſia, which almoſt every traveller has mentioned by the denomination of the *little ſtag*, or *little hind*. In fact, the chevrotain is a miniature reſemblance of the ſtag, by the ſhape of its muzzle, lightneſs of body, ſhortneſs of tail, and form of his legs; but differs greatly in ſize, the largeſt never exceeding that of the hare. Some of them are entirely without horns, and thoſe which have any, they are hollow, annulated, and nearly reſemble thoſe of the gazelles. Their ſmall cloven feet, is alſo more like that of the gazelle than of the ſtag; and they differ both from the gazelle and the ſtag, by not having any depreſſions or hollows under their eyes: in that particular they approach the goat, but in reality they are neither ſtags, gazelles, nor goats, but conſtitute one or more diſtinct ſpecies. Seba gives the figures and deſcriptions of five chevrotains. The firſt he calls the *little red Guinea hind without horns*; the ſecond, *the fawn, or the young delicate ſtag of Africa*; the third, *the little young ſtag of Guinea*; the fourth, *the little red and white hind of Surinam*; the fifth, *the red-haired African ſtag*. Of theſe five chevrotains, the firſt, ſecond, and third, are evidently the ſame animal; the fifth, which is larger than the three firſt, and whoſe hair is much ſtronger, and of a deeper colour, ſeems to be only a variety of the firſt; the fourth, which that author mentions as an animal of Surinam, appears to be only a ſecond variety of this ſpecies, which is found in Africa, but not in the ſouthern parts of Aſia; and I am greatly inclined to think that Seba was miſinformed, when he ſays this animal came from Surinam. Every traveller, who ſpeaks of theſe little ſtags, mentions them as being found in Senegal, Guinea, and the Eaſt-Indies; but not one affirms that he has ſeen them in America; and if the ſpotted chevrotain Seba ſpeaks of did come from Surinam, we muſt preſume that it had been tranſported from Guinea, or from ſome other ſouthern province of the old continent. But there appears to be a ſecond ſpecies of chevrotain, different from all thoſe we have mentioned, which ſeem to be only ſimple varieties of the firſt. This ſecond ſpecies has ſmall horns, not more than an inch in length, and the ſame in circumference: theſe horns are hollow, black, ſomewhat crooked, very ſharp at the points, and ſurrounded at the bottom with two or three tranſverſe rings. We have ſeen the feet and one of the horns of this animal in the royal cabinet, which ſufficiently demonſtrate it is either a chevrotain or a very ſmall gazelle. Kolbe, ſpeaking of this animal, ſays, it has horns like thoſe of the ſtag, and that the branches were in proportion to their age; this is an evident error, which a ſingle inſpection of the horns will clearly prove.

Theſe animals are of an elegant make, and their limbs finely proportioned for their ſize. But though they leap and bound with prodigious ſwiftneſs, yet, apparently, they cannot continue it long, for the Indians often hunt and frequently knock them down with their ſticks: they are greatly ſought after on account of the ſuperior excellence of their fleſh.

By comparing the teſtimonies of travellers it appears, firſt, that the chevrotain without horns is peculiar to the Eaſt-Indies; ſecondly, that the one with horns is the chevrotain of Senegal, and is called *guevei* by the natives; that only the male *guevei* is furniſhed with horns; fourthly, that the chevrotain marked with white ſpots, and which Seba ſays comes from Surinam, is, on the contrary, a native of the Eaſt-Indies, eſpecially of Ceylon, where it is called *memina*, *(fig.* 158.*)* we muſt, therefore, conclude, that there are but two kinds of chevrotains, namely, the *memina*, *(fig.* 157.*)* or the Indian chevrotain without horns; and the *guevei*, or Guinea chevrotain with horns; that the five ſpecies ſpoken of by Seba are only varieties of the memina ; and that the ſmalleſt kind, which in Senegal is called *guevei-kaior*, is only a variety of the guevei.

Theſe little animals can only live in exceſſively hot climates ; they are ſo exceedingly delicate that it is with the greateſt difficulty they are tranſported into Europe alive, where they periſh in a ſhort time. They are gentle, familiar, and very beautiful. They are, without doubt, the leaſt of all cloven-footed animals. According to this character they ſhould not bring forth many young ; but if we reaſon from their ſmall ſize they ſhould produce ſeveral at a litter. As to the fact on this point we muſt wait until opportunity is procured to make the obſervation ; we are inclined to think they bring forth but one or two at a time, like the gazelles, roe-bucks, &c. but poſſibly they produce more frequently, for they are exceedingly numerous in India, Java, Ceylon, Senegal, Congo, and in every other country that is exceſſively hot, but are not to be found in America, nor in any of the temperate climates of the old continent.

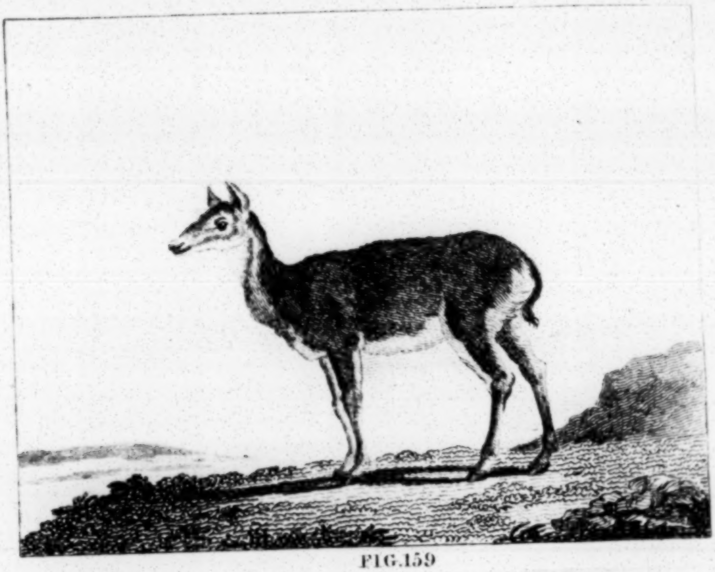
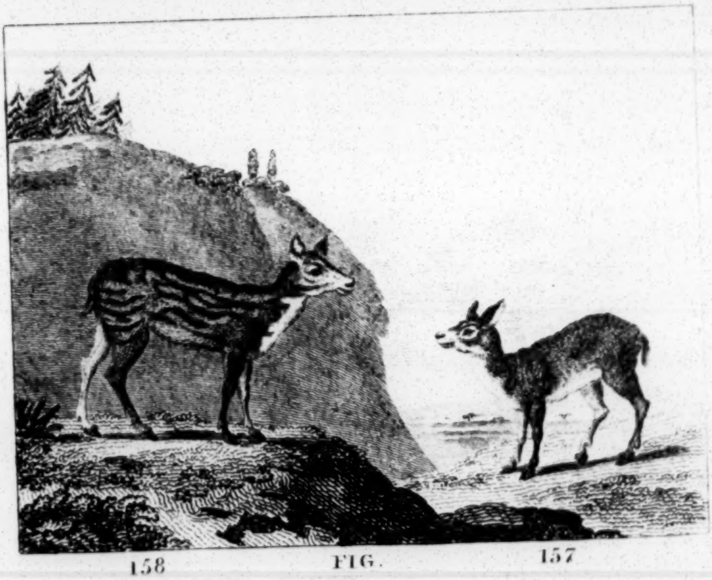


FIG.159

Cariacou



158 FIG. 157

D° of Ceylon *Mamina*

THE MAZAMES.

MAZAME, in the Mexican language, was the name of the ſtag, or rather a generic name, including the whole race of ſtags, fallow-deer, and roe-bucks. Hernandes, Recchi, and Fernandes, who have tranſmitted this name to us, diſtinguiſh two ſpecies of mazames, both common in Mexico and New Spain. The firſt and largeſt, to which they give the ſimple name of *mazame*, has horns like thoſe of the roe-buck of Europe, that is, about ſix or ſeven inches in length, with the extremities divided into two points, and a ſingle antler. The ſecond, called *temamaçame*, is much leſs, and has but a ſingle horn, and without any antlers. Theſe two animals ſeem to be roe-bucks, the firſt being the ſame ſpecies as the European roe-buck, and the ſecond only a variety of it. It alſo appears, that theſe mazames and temamaçames of Mexico are the ſame as the *cuguacu-apara*, and the *cuguacu-ĕtĕ* of Braſil, and that in Cayenne the firſt is called *cariacou*, (*fig.* 157.)

or the foreſt hind; the ſecond, *the ſmall cariacou*, or *the hind of the marſhes*. Though we are the firſt who have pointed out theſe relations, yet we ſhould not have preſumed that there were neither difficulties nor doubts on this ſubject, if Seba had not mentioned the mazame and the temamaçame as two different animals: theſe are not roe-bucks with ſolid and branched horns, but gazelles with hollow and wrinkled ones: theſe are not animals of New Spain, as this author deſcribes them, but natives of Africa. Theſe errors of Seba have been adopted by moſt authors who have written ſince. They have not ſuſpected that the animals mentioned by Seba, under the names of mazame and temamaçame, were the ſame as thoſe mentioned by Hernandes, Recchi, and Fernandes. The confuſion of the names has been followed by a confuſion of the animals, and, in conſequence, ſome naturaliſts have indicated theſe animals by the name of chevrotains, and others by that of gazelles, or goats. It appears that Linnæus ſuſpected this error, for he has not adopted it. He has placed the mazame in the liſt of ſtags, and has thought, as we do, that the Mexican mazame is the ſame animal as the cuguacu of Braſil.

To demonſtrate what we have advanced, we will ſuppoſe that there were neither gazelles, nor chevrotains, in New Spain, or in any other part of America, and that all thoſe, as well as goats, which are at preſent there, have been carried from the old continent; that the true mazame of Mexico is the ſame animal as the cuguacu-apara of Braſil; that the name *cuguacu* is pronounced *couguacou*; and that, by corruption, this animal is called *cariacou* at Cayenne, from whence we had a living one ſent us by this name of *cariacou*. We ſhall now endeavour to find out what ſpecies of animals theſe may be to which Seba has applied the names mazame and temamaçame, for to deſtroy an error it is not ſufficient to reject it, but we ſhould alſo explain the cauſe and demonſtrate the effects.

The gazelles and chevrotains inhabit only the hotteſt countries of the Old World; they cannot exiſt in temperate climates, and ſtill leſs in thoſe that are cold. They could not, therefore, have ever frequented the northern countries; have paſſed, by that means, from one continent to the other; nor have any travellers or hiſtorians of the New World, ever pretended to have ſeen them in that part of the globe. On the contrary, ſtags and roe-bucks, which inhabit cold and temperate climates, might have paſſed over the northern lands, and therefore are met with in both continents. We have obſerved, in our hiſtory of the ſtag, that the Cardian ſtag is the ſame as that of Europe; that he is only ſmaller, and has ſome ſlight variations in the ſhape of his horns and the colour of his hair. We may add, to what has been already ſaid, that in America there are as many varieties among ſtags as in Europe, notwithſtanding which they are of the ſame ſpecies. One of theſe varieties is the Corſican ſtag, which is ſmaller and browner than the common kind. We have alſo mentioned white ſtags, and hinds, and have ſaid, that this colour proceeds from their domeſtic ſtate; this kind is alſo found in America, as well as our common and ſmall brown ſtags. The Mexicans, who keep theſe white ſtags in their parks, have denominated them *Royal Stags*. It is a native of Germany, and commonly called the *Stag of Ardennes*; and *Brandhirts*, by the Germans: it is at leaſt as big as the large French ſtags, but differs from them by ſeveral particular characters. Its coat is thicker, and of a lighter colour under its belly: its throat and neck is furniſhed with long hairs, like the he-goat, which has cauſed both ancients and moderns to give it the name of *tragelaphus*, or *ſtag-like goat*. There are alſo a great number of roe-bucks in America: we are only acquainted with two varieties in Europe, the red and the brown; the latter are ſmaller than the former, but they perfectly reſemble each other. The mazame of Mexico, the cuguacu-apara of Braſil, and the cariacou, or foreſt hind of Cayenne, entirely reſemble our red roe-bucks. Comparing the deſcriptions given of them is a ſufficient proof, that all theſe names denote the ſame animal. But the temamaçame, which we ſuppoſe to be the cuguacu-été of Braſil, the ſmall cariacou of Cayenne may be a variety different from thoſe of Europe. The temamaçame is leſs, and whiter on the belly than the mazame, in the ſame manner as our brown roe-buck has a whiter belly, and is ſmaller than our red one: it ſeems alſo to differ by the horns, which is ſingle and without antlers in the figure given by Recchi: but if we conſider, that our roe-bucks, and ſtags, have no antlers in the firſt, and ſometimes even in the ſecond year of their age, we ſhall be inclined to think, that Recchi's temamaçame was too young to have antlers: theſe two animals therefore appear to be only ſimple varieties in the roe-buck ſpecies.

It now remains to enquire what theſe two animals, mentioned by Seba, by the falſe names of *mazame* and *temamaçame* really are. The bare inſpection of the figures, independent of his deſcription, demonſtrates, that theſe animals belong to the goats or gazelles, and not to the ſtags or roe-bucks. The want of a beard, and the ſhape of the horns, prove, they are not goats, but gazelles; and, by comparing Seba's figures with the gazelles which we have deſcribed, I found that his pretended *temamaçame of New Spain*, is the *kob*, or *little brown cow of Senegal.* The figure, colour, and ſize of the horns are the ſame; the colour of the hair is alſo the ſame, and differs from that of other gazelles, by not being white, but yellow under the belly and upon the flanks. With reſpect to the pretended mazame, although it reſembles the gazelles in general, yet it differs in particular from all thoſe we have before enumerated; but we ſaw in M. Adanſon's cabinet, where he has collected the moſt rare productions of Senegal, a ſtupid animal which we call *nagor*, by reaſon of the reſemblance of its horns with thoſe of the nanguer. This animal is found in the neighbouring iſland of Goree, from whence he was ſent to M.

Adanſon by M. Andriot, and poſſeſſes all the characters which Seba gives to his pretended mazame; its body is of a pale red, and its belly is not white, like the other gazelles; it is of the ſize of the roe-buck; its horns are not ſix inches long, almoſt ſmooth, and ſlightly bent forwards, but not ſo much as thoſe of the nanguer. Therefore this animal, mentioned by Seba, by the name of *mazame*, or *American ſtag*, is only an African goat, or gazelle, which we have added here by the name of the *nagor* to the twelve other gazelles, whoſe hiſtory we have already given.

THE COUDOUS.

OF all animals thoſe that chew the cud are the moſt numerous and moſt varied. This claſs contains, as we have ſeen, a great number of ſpecies, and, perhaps, a ſtill greater number of diſtinct races, or conſtant varieties. Notwithſtanding all our enquiries, and the conſiderable details into which we have been obliged to enter, we freely confeſs, that we have not exhauſted the ſubject, and that there ſtill remains, even very remarkable animals which we are only acquainted with by imperfect fragments, and are unable to aſcertain poſitively to what animals they belong. For example, in the very great collection of horns in the royal cabinet, as well as thoſe diſperſed in private muſeums, each of which, after much labour, and a multiplicity of compariſons, we have referred to the animal it belonged ; there ſtill remained one without label, or any mark affixed to it, abſolutely unknown. This horn is large, almoſt ſtraight, and compoſed of a very thick black ſubſtance ; it is not ſolid, like that of the ſtag, but reſembles that of the ox. From the baſe to beyond the middle of the horn is a thick ridge, raiſed about an inch ; and although the horn be ſtraight this prominent ridge makes a ſpiral turn and an half in the inferior part, and is wholly effaced in the ſuperior part of the horn which terminates in a point. This horn, which differs from every other, ſeems to have the neareſt affinity to that of the buffalo. But we are ignorant of the name of the animal to which it belongs Not long ſince, however, after ſeeking in a number of different cabinets, we found in that of M. Dupleix part of a head adorned with two ſimilar horns, having on it a label with theſe words, "*the horns of an animal nearly like a horſe of a greyiſh colour*; *with a mane on the fore part of its head like a horſe*; *it is called at Pondicherry* coeſdoes, *which ſhould be pronounced* coudous." This little diſcovery gave us great pleaſure; but we have not been able to meet with this name of *coeſdoes*, or *coudous*, in the writings of any traveller, the label only has informed us that it is of a large ſize, and to be met with in the hotteſt countries of Aſia. The buffalo is of the ſame climate, and has likewiſe a mane; it is true his horns are crooked and flat, while thoſe of the coudous are round and ſtraight, which, together with the colour, are ſufficient indications of the difference of theſe two animals; for the buffalo has a black ſkin and hair, and, according to the label, the hair of the other is grey. The relations ſuggeſt others: the travellers in Aſia ſpeak of the large buffaloes of Bengal, of red buffaloes, and of the grey buffaloes of the Mogul empire, which are called *nil-gauts*; the coudous may poſſibly be one or other of theſe animals. The travellers into Africa, where the buffalo is as common as in Aſia, more preciſely mention a ſpecies of buffalo, called *pacaſſe* at Congo, which ſeems to be the coudous. "In the route from Louanda to the kingdom of Congo *, we perceived two pacaſſes, which are animals reſembling buffaloes, and which roar like lions. The male and female go always together; they are white, ſpotted with red and black; their ears are about half an ell long, and their horns are perfectly ſtraight: they neither fly at the ſight of the human ſpecies nor do any injury, but only ſtare at them as they paſs along." We have before mentioned, that the animal, called at Congo empacaſſa, or pacaſſa, appeared to be the buffalo. It is, in fact, a kind of buffalo, but differs from it by the ſhape of the horns and the colour of the hair; in one word, the pacaſſa is the coudous, which poſſibly forms a ſeparate ſpecies from that of the buffalo, and, perhaps, may only be a variety of it.

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* Relation de Congo, par les P. P. Michael-Ange de Galline et Denys de Charly de Plaiſance, Capuchins.

THE MUSK.

TO finiſh the hiſtory of goats, gazelles, chevrotains, and other animals of this genus, which are all found in the old continent, it only remains to give that of the Muſk, an animal as famous as it is unknown. We mean that animal which produces the muſk; all modern naturaliſts, and the greateſt part of travellers through Aſia, have mentioned it, ſome by the name of a ſtag, a roe-buck, or a muſk-goat, and others have conſidered it as a large chevrotain. It indeed ſeems to be of an ambiguous nature, participating of all the above animals, at the ſame time we can aſſert, that its ſpecies is different from all other quadrupeds. It is about the ſize of a ſmall roe-buck, but its head is without horns, and by this character it reſembles the *memina* or *chevrotain* of India. It has two great canine teeth or tuſks in the upper jaw, by which it approaches that of Guinea; but what diſtinguiſhes the muſk from all other animals is a kind of bag about two or three thre inches in diameter, which grows near the navel, and in which the liquor, or rather the greaſy humour called muſk is ſecreted, and which differs from that of the civet both by ſmell and conſiſtence. Neither the Greeks nor Romans mention the muſk animal. The firſt that noticed it were the Arabs. Geſner, Aldrovandus, Kircher, and Boym have given more extended accounts of this animal; but Grew is the only perſon who has made an exact deſcription of it, from a ſkin which was preſerved in the cabinet of the Royal Society of London. His deſcription is as follows:—"The muſk ſtag is about three feet ſix inches in length, from the head to the tail; the head is about half a foot long; the neck ſeven or eight inches; the fore part of the head three inches broad, and the noſe ſharp like that of a greyhound; the ears are erect, like thoſe of a rabbit, and about three inches long; the tail is not above two inches; the fore-legs, including feet and thighs, are thirteen or fourteen inches long; he is cloven footed, armed on his fore-feet behind and before with two horny ſubſtances; the hind feet were wanting. The hair of the head and legs about half an inch long, and very fine; thicker under the belly, and an inch and an half in length; on the back and crupper they are three inches, and three or four times thicker than the briſtles of a hog, of courſe more ſo than that of any other animal. It is brown and white alternately, from the root to the point; on the head and thighs it is brown; under the belly and tail white; a little curled, eſpecially on the back and belly; it is very ſoft, and has the appearance of being ſomething between a common hair and a quill; on each ſide of the lower jaw, under the corners of the mouth, there is a ſmall tuft of thick hair, which is ſhort and hard, about three-fourths of an inch long, and ſomewhat reſembling the briſtles of a hog. The bladder, or bag, which contains the muſk is about three inches long, two broad, ſwells out from the belly about an inch and an half, and ſtands near as much before the groin. The animal has twenty-ſix teeth, ſixteen in the lower jaw, of which the eight in front are inciſive, the four grinders behind, are rugged and continuous, and as many ſimilar grinders in the upper jaw. There is alſo a tuſk about two inches and an half long on each ſide in the upper jaw, which terminate in the form of a hook, not round but flat, and have a ſharp edge behind. They have no horns, &c. *

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* Grew's Muſeum.

In 1681, a year after Grew's publication, Luc Schrockius printed a hiſtory of this animal at Vienna, in which we do not find any thing very exact, nor abſolutely new. We ſhall, however, ſelect ſuch facts, as may be collected from it, which agree with thoſe in other authors, and eſpecially in the works of the more modern travellers. We have been under the neceſſity of contenting ourſelves with collecting what has been ſaid of this animal which we have never ſeen, and which we have not been able to procure. By Grew's deſcription, which is the only authentic work we can rely on, it appears, that the hair of this animal is long and rough, the muzzle pointed, and tuſks ſomewhat like thoſe of the hog: by theſe characters it approaches the boar kind, or perhaps ſtill more the babirouſſa, which the naturaliſts have denominated the *Indian boar*; though reſembling the hog in many characters, like the muſk animal, he is much ſmaller, and has longer and ſlender legs, like thoſe of the ſtag or roe-buck. On the other hand, the American hog, which we have called *pecari*, has a bag, or cavity, on its back, containing an odoriferous humour. The muſk animal has a ſimilar bag, not on his back, but under the belly. In general, thoſe animals which produce odoriferous liquors, as the badger, the beaver, the pecari, the muſk-rat, the civet, the zibet, are not of the ſtag or goat genus: thus we might be tempted to think, that the muſk animal is nearer the hog kind, of which he has the tuſks, if he had, at the ſame time, inciſive teeth in his upper jaw; but his deficiency of thoſe teeth, makes him come nearer the ruminating animals, and eſpecially the chevrotain, which ruminates, though it has no horns; but all theſe external indexes can only furniſh us with conjectures. It is the inſpection of the internal parts alone that can decide the nature of this animal, which is not even as yet perfectly known; nor have I placed him after the goats and antelopes from having any reaſon to conclude he belongs to thoſe ſpecies.

Marc Paolo, Barboſa, Thevenot, and Marini, are all more or leſs deceived in the characters they have given of this animal. The only true point which they agree upon is, that the muſk is formed in a bag, or tumour, near the navel, and it appears by their teſtimonies, as well as thoſe of other travellers, that the male only produces the muſk; that the female has a like bag near the navel, but that the humour which gathers there, has not the ſame ſmell; that this tumour of the male is only filled with muſk at the rutting-time, and that at other times the quantity of this humour is leſs, and the odoriferous ſcent much weaker.

In reſpect to the muſk itſelf, its eſſence, or pure ſubſtance, is, perhaps, as little known as the nature of the animal which produces it. All travellers agree, that the muſk is always mixed and adulterated with blood, or ſome other drugs, by thoſe who ſell it. The Chineſe not only increaſe the quantity by a mixture, but they endeavour likewiſe to increaſe the weight, by incorporating with it lead very finely ground. The pureſt muſk, and that which is the moſt ſought after, even by the Chineſe themſelves, is that which the animal depoſits upon trees or ſtones, againſt which he rubs himſelf when the quantity becomes too great, or renders the pouch uneaſy. That found in the bag is ſeldom ſo good, becauſe it is not fully ripe, or becauſe that it is only in their rutting ſeaſon that it acquires all its ſtrength and ſmell; and that it is at this time, the animal endeavours to diſburthen himſelf of a matter which then cauſes violent itchings, and poſſibly ſome degree of pain.

Chardin and Tavernier have both deſcribed the mean, which the eaſtern nations make uſe of to adulterate the muſk*: the merchants muſt neceſſarily increaſe the quantity of it beyond conception, ſince in one year Tavernier purchaſed 1663 bags, which ſuppoſes an equal number of animals to have been taken. But as this animal is no where domeſtic, and the ſpecies is confined to ſome few eaſtern provinces, it is impoſſible to be ſufficiently numerous to produce ſo great a quantity of this matter. We cannot, therefore, doubt but the greateſt part of theſe pretended bags, or bladders are only artificial ones made of the ſkin of the other parts of the animal, and filled with its blood, mixed with a very ſmall quantity of true muſk. Its ſcent is, in fact, the ſtrongeſt of any yet known; a ſingle grain is ſufficient to perfume a great a great quantity of other matter; and the odour of the ſmalleſt particle is ſufficient to perfume a conſiderable ſpace; and the perfume itſelf is ſo permanent, that at the end of ſeveral years it does not ſeem to have loſt much of its power.

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* It is ſaid that when the animal is taken, and the muſk-bag firſt opened, that the odour is ſo ſtrong the hunter is obliged to have ſeveral folds of linen over his noſe and mouth, and that even then it ſometimes proves fatal. I am inclined to believe this is true, becauſe the muſk decreaſes in ſtrength with time, and when I dealt in that article, I always found it requiſite to ſtand in the open air, and at a diſtance from thoſe who moved the bladders. This drug is, however, very frequently adulterated by the hunters with the blood of the animal, and by the merchants with the blood of oxen, lead, &c. But the natives of India have various methods of detecting this adulteration, they diſcover it by the taſte, and weight, but moſtly with a thread ſteeped in the juice of garlic which they draw through the bag with a needle, and if it retains that ſmell they are certain of its being adulterated. *Voyage de Chardin.*

THE BABIROUSSA.

ALTHOUGH we have only the head of this animal in the royal cabinet, it is too remarkable to be paſſed over in ſilence. All naturaliſts have looked upon it as a kind of hog, though neither its head, ſize, briſtles, nor tail, reſemble that animal: its legs are longer, and its muzzle ſhorter; it is covered with ſhort hair, as ſoft as wool, and its tail is terminated by a tuft; its body is likewiſe not ſo thick and clumſy as that of the hog; its hair is grey, mixed with red and a little black; its ears are ſhort and pointed; but the moſt remarkable character, and what diſtinguiſhes it from all other animals, are four enormous tuſks, or canine teeth, the two ſhorteſt of which ſhoots out of the lower jaw, like thoſe of the wild boar,

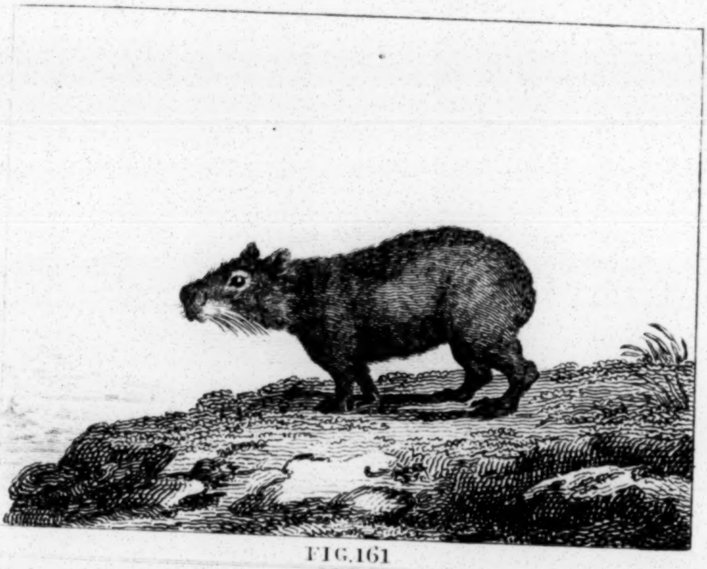


FIG. 161
Cabiai

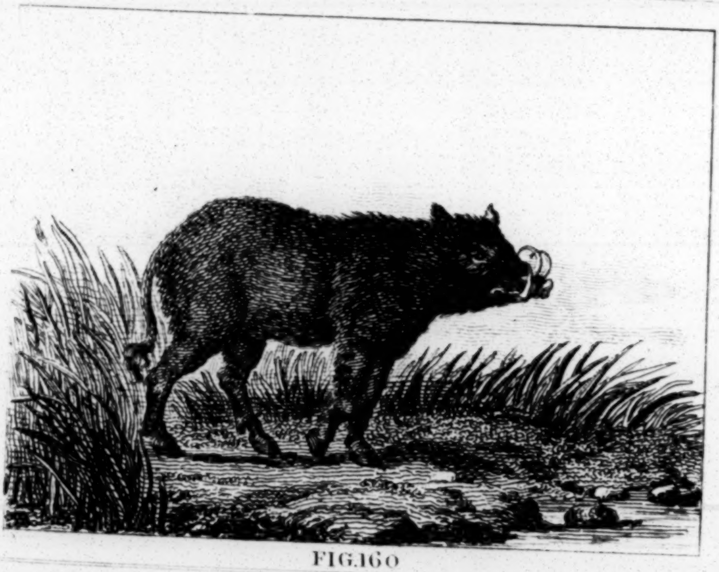


FIG. 160
Babiroussa

boar, and the two others, which come from the upper jaw, pierce the cheeks, or rather the upper part of the lips, and riſe in a curve almoſt to the eyes. The tuſks are a very beautiful ivory, much ſmoother and finer, but not ſo hard as that of the elephant.

The direction of the two upper tuſks which riſe upright, and then bend in form of a circle, have made ſome ſkilful naturaliſts, ſuch as Grew, imagine that theſe tuſks ought not to be looked upon as teeth, but as horns. They founded their opinion upon the circumſtance that in all animals the ſockets of the teeth in the upper jaw open downwards; that in the babirouſſa, as in the other animals, the ſockets are turned downwards, except thoſe of theſe two great tuſks, which, on the contrary, are turned upwards; and they concluded from thence, that from this eſſential character of the upper teeth, theſe tuſks, whoſe ſockets are directed upwards, ought to be looked upon as horns and not as teeth. But theſe philoſophers were deceived; the poſition or direction are only circumſtances, and not eſſential to the exiſtence of an object. Theſe tuſks, tho' ſituate in an oppoſite manner to that of the other teeth, is only a ſingularity in the direction, which cannot change the nature of the thing, nor make an ivory horn of a true canine tooth.

Theſe enormous tuſks give this animal a very formidable appearance; they are, however, leſs dangerous than our wild boars. They go in herds, and have a very ſtrong ſmell, by which they are eaſily diſcovered, and are hunted by dogs with good ſucceſs. They growl terribly, defend themſelves, and wound their enemies with their under tuſks; for the upper are rather of diſſervice than of uſe to them. Although ſavage and ferocious, they are tamed with great eaſe; and their fleſh, which is very good, putrifies in a very ſhort time. As their hair is fine, and their ſkin delicate, it is ſoon penetrated by the teeth of dogs, who hunt them in preference to wild boars, and ſooner accompliſh their purpoſe. They faſten their upper tuſks in the branches of trees, to reſt their heads, or to ſleep ſtanding. This habit they have in common with the elephant, who, in order to ſleep in a ſtanding poſture, ſupports his head by fixing the end of his tuſks in the holes he makes in the walls of his lodging.

The babirouſſa differs ſtill more from the wild boar by its natural appetites; he feeds upon graſs and leaves of trees, and does not endeavour to enter gardens to feed on beans, peaſe, and other vegetables; while the wild boar, who lives in the ſame country, feeds upon wild fruits, roots, and often deſtroys the gardens. Beſides, theſe animals, who go together in herds, never intermix; the wild boars keep on one ſide, and the babirouſſas on the other. The latter walk quicker, and have a very fine ſmell, and often ſtand erect againſt the trees to ſcent the approach of dogs or hunters. When they are purſued to any great diſtance they make towards the ſea, and, ſwimming with great dexterity, very often eſcape their purſuers, for they ſwim for a long time, and often to very great diſtances, and from one iſland to another.

The babirouſſa is found not only in the iſland of Bouro, or Boero, near Amboyna, but alſo in many parts of the South of Aſia and Africa; as at Celebes, Eſtrila, Senegal, and Madagaſcar, for it appears, that the wild boars of this iſland, which Flacourt ſpeaks of, and ſays, *that the males chiefly have two horns on the ſide of their noſe*, are babirouſſas. We have not had it in our power to determine whether the female has the two tuſks which are ſo remarkable in the male, but moſt authors ſeem to agree that they have.

SUPPLEMENT.

HAVING been favoured with two drawings of this animal, we are now enabled to preſent a figure of the Babirouſſa, *(fig.* 160.*)* and which we believe will give a tolerable idea of him, ſince it was taken with much care, and is a combination of both ; the one of them we received from M. Sonnerat, which repreſented him in a ſtanding poſture, and the other lying on its belly, was ſent us from England by Mr. Pennant, with the following label : "a Babirouſſa from the iſland of Banda, drawn from nature ; it is of a blackiſh colour, grows to the ſize of a large hog, and its fleſh is very good to eat."

THE CABIAI.

THIS American animal had never been ſeen in Europe until the Duke of Bouillon procured one to be ſent to him from America. As this prince is curious in foreign animals, he has often done me the honour of inviting me to ſee them; and he has even given me ſeveral ſpecies for the advantage of this work. This animal *(fig. 161.)* was ſent very young to him, and was not arrived to its full growth before the cold killed it. It is not a hog, as naturaliſts and travellers have pretended; it only reſembles that animal by trifling marks, and differs from it by ſtriking characters. The largeſt cabiai is ſcarcely as big as a hog of eighteen months growth. The head is ſhorter, and its mouth leſs; the eyes are larger, the number and form of the teeth are different, it wants a tail, and is web-footed; the hoofs before are divided into four parts, and thoſe behind into three, between the diviſions there is a prolongation of the ſkin, ſo that the feet, when opened in ſwimming, can beat a greater ſurface of water, in which it frequently lives; it ſwims like an otter, ſeeks the ſame prey, and ſeizes the fiſh with its feet and teeth, and carries them to the banks to eat. It alſo eats fruits, corn, and ſugar-canes. As its feet are broad and flat it often ſits upon its hind ones. Its cry more reſembles the braying of an aſs than the grunting of an hog. It ſeldom ſtirs out but at night, and almoſt always in company, without going far from the ſides of the water. It can find no ſafety by flight, from the length of its feet and the ſhortneſs of its legs. To eſcape its enemies it plunges into the water, and remains at the bottom ſo long that the hunters loſe all hopes of ſeeing it again. It is fat, and the fleſh is tender, but, like that of the badger, it taſtes more like bad fiſh than good fleſh ; the head, however, is not bad, and this agrees with what is ſaid of the badger, his fore parts are pretty good, while his hind ones taſte like fiſh.

The cabiai is quiet and gentle ; it is neither quarrelſome nor ſavage with other animals. It is eaſily tamed, comes at call, and willingly follows thoſe who feed and treat it with kindneſs. It was fed at Paris with barley, ſallad, and fruits, and was healthy while the weather kept warm. By its number of paps we ſhould ſuppoſe that the females produce ſeveral young at a litter. We do not know how long they go with young, the time of their growth, nor, conſequently, their length of life. The natives, or coloniſts, of Cayenne might inform us of theſe particulars, for it is very common in Guiana, as well as in Braſil, in Amazonia, and in all the lower countries of South America.

SUPPLEMENT.

WE have been informed by M. de la Borde, that the Cabiai is a common animal in Guiana, and on the borders of the Amazon river; he ſays that the male and female always go together; that they avoid the habitations of men, and always live by the ſides of rivers, into which they go whenever they are diſturbed, ſwimming like hogs to a great diſtance, ſometimes diving to the bottom, where they will remain a conſiderable time; that the natives frequently take them when very young, and bring them up in their houſes, where they ſoon become familiar, and will eat bread, millet, and herbs, although they principally live on fiſh when in their wild ſtate; that the females produce but one at a time; that they are perfectly harmleſs; and that their fleſh is white and well taſted. Although this laſt fact may ſeem to contradict what we have formerly ſtated was affirmed by other authors, yet it is by no means improbable that their fleſh may be bad when in their wild ſtate, from feeding on fiſh, and yet very good when they live on bread and grain,

As one of theſe animals lived ſome time in Paris, I am of opinion they would propagate in our climate; and the more eſpecially as I find the one I formerly alluded to was not killed by the cold, but that the winter had no particular effect upon it; that animal, I have ſince been informed, was confined in an upper room, from the window of which it jumped, aad falling into a veſſel of water was drowned.

THE PORCUPINE.

THE name given to this animal leads to a ſuppoſition that it is a hog covered with ſpiny quills, when, in fact, it only reſembles that animal by its grunting; in every other reſpect it differs from the hog as much as any other animal, both by its outward appearance and interior conformation. Inſtead of a long head and ears, armed with tuſks, and terminated with a ſnout; inſtead of cloven feet, furniſhed with

Engraved for Barrs Buffon

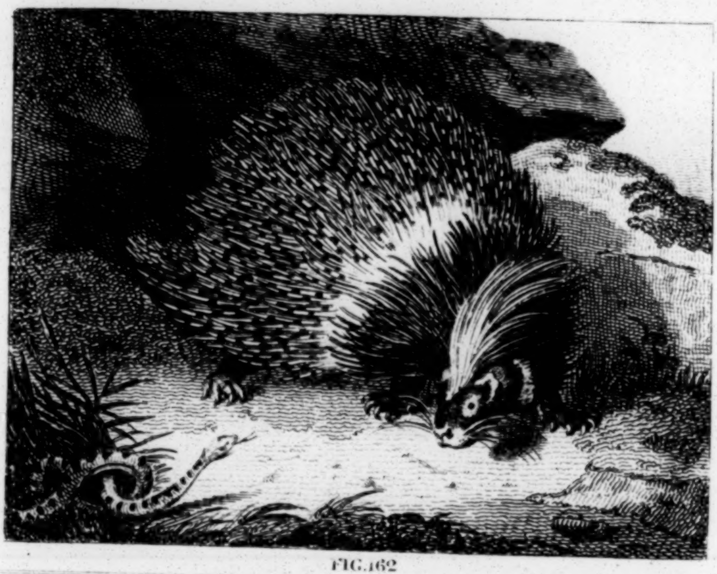
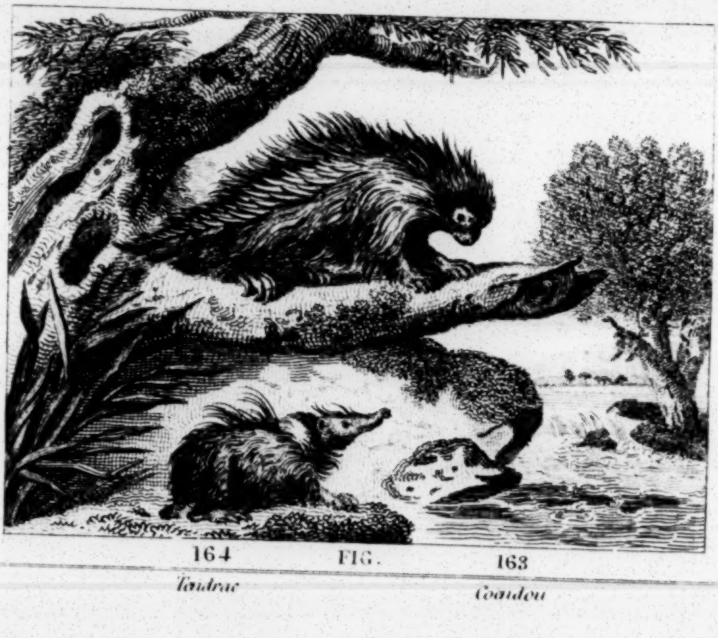


FIG.162

Porcupine



164 FIG. 163

Tendrac *Coendou*

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with hoofs like the hog; the porcupine has a ſhort head like the beaver, two large inciſive teeth in each jaw, no tuſks or canine teeth, the upper lip divided like that of the hare, the ears round and flat, and the feet armed with claws. Inſtead of a large ſtomach, with an appendix in form of a cowl, the porcupine has only a ſingle ſtomach with a large cæcum gut. The parts of generation are not apparent, as in the boar, and its teſticles are concealed in the groin. By all theſe marks, together with its ſhort tail, long whiſkers, and divided lip, it approaches more to the hare or beaver than to the hog. The hedge-hog, indeed, who, like the porcupine, is covered with prickles, ſomewhat reſembles the hog, for it has a long muzzle, terminated by a kind of ſnout; but all theſe reſemblances being ſo very ſlight, it is clear that the porcupine *(fig.* 162.*)* is a particular and different ſpecies from the hedge-hog, the beaver, the hare, or any other animal it may be compared with.

Travellers and naturaliſts have almoſt unanimouſly declared this animal has the faculty of diſcharging its quills, and with ſuch force as to wound its foes at a great diſtance; and that theſe prickly quills have the extraordinary property of penetrating farther into the fleſh of their own accord and power, as ſoon as the point has made an entrance. This laſt circumſtance is purely imaginary, without any foundation, and the firſt is as falſe as the ſecond. The error ſeems to have ariſen from this animal raiſing his prickles upright when he is irritated; and as ſome of them are only inſerted into the ſkin by a ſmall pellicle they eaſily fall off. We have had many living porcupines, but never ſaw them dart any of their quills, even though violently agitated. It is a matter of aſtoniſhment, therefore, that the graveſt authors, both ancient and modern, as well as the moſt ſenſible travellers, ſhould join in opinion reſpecting a circumſtance ſo entirely falſe. Some affirm that they have been wounded by this ſort of darting; others aſſert, that the quills are darted with ſuch vengeance, as to pierce a plank at a great diſtance. The marvellous commonly is pleaſingly believed, and increaſes in proportion to the number of hands it paſſes through. Truth, on the contrary, diminiſhes in the ſame degree; and in ſpite of the poſitive negative which I have placed on theſe two fictions, I am perſuaded, that many future writers will aſſert that the porcupine darts his quills to a diſtance, and that when thoſe quills are ſeparated from the body of the animal, they will of themſelves, and with their own exertions, penetrate deeper into thoſe bodies in which the point has entered.

However, in juſtice to Dr. Shaw, we muſt except him from the number of theſe credulous travellers: "Of all the number of porcupines (ſays he) which I have ſeen in Africa, I never yet met with one who could dart their quills, however ſtrongly he was irritated; their common method of defence is to lie on one ſide, and when the enemy approaches very near, to riſe ſuddenly and wound him with the points of the other."

The porcupine, although originally a native of the hotteſt climates of Africa and India, lives and multiplies in colder countries, ſuch as Perſia, Spain, and Italy. Agricola ſays, that the porcupine had not been tranſported into Europe much before his time. They are found in Spain, but more commonly in Italy, eſpecially on the Appenine mountains, in the environs of Rome.

Pliny, and other naturaliſts, have ſaid, after Ariſtotle, that the porcupine, like the bear, conceals himſelf during winter, and that they bring forth in thirty days. We have not had it in our power to verify theſe facts; and it is ſingular, that in Italy where this animal is common, and where there has ever been ſkilful philoſophers and excellent obſervers of nature, that the hiſtory of this animal has never been written by any of them. Aldrovandus, in ſpeaking on this ſubject, has, like the reſt, only copied Geſner; and the gentlemen of the academy, who have diſſected eight of theſe animals, ſay very little that has any relation to their natural habits. We only learn from the teſtimonies of travellers, and perſons who have kept them in menageries, that the porcupine in its domeſtic ſtate, is neither ſavage nor furious, but only anxious for liberty; that with the aſſiſtance of his fore teeth, which are ſharp and ſtrong like thoſe of the beaver, he eaſily cuts through his wooden priſon. It is alſo known that he feeds willingly on fruits, cheeſe and crumbs of bread; that in his wild ſtate, he lives upon roots and wild grain; that when he can enter a garden he makes great havock therein, eating the herbs, roots, fruits, &c. that he becomes fat, like moſt other animals, toward the end of the ſummer; and that the fleſh of this animal, although a little inſipid, is tolerable eating.

When the form, ſubſtance, and organization of the prickles of the porcupine are conſidered, they are found to be tubes to which only vanes are wanting to make them real feathers. They ſtrike together and make a noiſe as the animal walks; he can eaſily erect them in the ſame manner as the peacock ſpreads the feathers of his tail, and as eaſily ſmooths them again by the contraction of the cuticular muſcle. This muſcle, therefore, has the ſame power, and is nearly of the ſame formation in the porcupine as in ſome birds.

THE COENDOU.

IN every article we have to treat of we always meet with more errors to confute than facts to relate. This ariſes from the hiſtory of animals having been only written of late by prejudiced perſons, who take the liſt of their little ſyſtems for the genuine regiſter of Nature. There are not any animals of the warm climates of the old continent exiſting in America, and reciprocally there are not any of the South American animals to be met with under the torrid zone of Africa and Aſia. The porcupine, as already obſerved, is a native of the hot countries of the old world, and having never been found in the new, they have not heſitated to give his name to animals which ſeemed to reſemble him, and particularly to that which we have now under conſideration. On the other hand, the Coendou (*fig.* 163.) of America has been tranſported to the Eaſt Indies; and Piſo, who probably was not acquainted with the porcupine, has made Bontius, who only ſpeaks of animals in the ſouthern parts of Aſia, engrave the coendou of America, under the name and deſcription of the true porcupine; ſo that, at the firſt view, we might be led to believe that this animal exiſted equally in America and in Aſia. It is eaſy, however, to diſcover, with a little attention, that Piſo, who is in this, as well as in moſt parts of his work, only a plagiariſt of Marcgrave, has not only copied his figure of the coendou, into his hiſtory of Braſil, but has copied it again for the work of Bontius, of which he was the editor. Therefore, though we find the figure of the coendou in Bontius, we muſt not conclude, that it exiſts in Java, or in any other part of the Eaſt Indies, nor take this figure for that of the porcupine, which, in fact, the coendou only reſembles by its quills or prickles.

It is to Ximenes, and afterwards to Hernandes, that we owe the firſt knowledge of this animal, which they have indicated under the Mexican name of *hoitztlacuatzin*. The *tlacuatzin* is the opoſſum, and the *hoitztlacuatzin* ſhould be tranſlated the *briſtly* or *ſpinous opoſſum*. This name has been miſapplied, for theſe animals reſemble each other very little. Marcgrave has not adopted this Mexican denomination, but calls this animal *cuandu*. The only thing we can reproach Marcgrave with, is his not having known, that the cuandu of Braſil was the ſame animal as the hoitztlacuatzin of Mexico, eſpecially as his deſcription and figure agree with thoſe of Hernandes ; and as Laët, the editor and commentator of Marcgrave expreſsly ſays, that the ſpiny tlacuatzin of Ximenes, and the cuanda, are probably the ſame animal. By collecting the ſcattered accounts of travellers there appears to be two varieties of theſe animals, which the naturaliſts, after Piſo, have inſerted in their liſts as two different ſpecies, namely, the great and the little coendou : but what immediately proves the error, or negligence of Piſo, is, that although he deſcribes theſe coendous in two ſeparate and diſtinct articles, and ſeems to looke on them as different ſpecies, he repreſents both by the ſame figure ; which we think ſufficient foundation to pronounce them the ſame animal. There are likewiſe other naturaliſts who have not only made two ſpecies of the great and little coendou, but have alſo ſeparated the hoitztlacuatzin, and given all three as different animals. I own, indeed, that although it is probable, the coendou and the hoitztlacuatzin are the ſame animal, yet this identity is not ſo certain as that of the great and little coendou.

However that may be, the coendou is not the porcupine. He is much ſmaller; his head and muzzle ſhorter; he has no tuft on his head, nor is his upper lip divided; his quills are proportionally ſhorter and much finer; his tail is long, and that of the porcupine very ſhort: he is carnivorous rather than frugivorous, and endeavours to ſurprize birds, ſmall animals, and poultry, while the porcupine only feeds upon herbs, roots, and fruits. He ſleeps all the day like the hedge-hog, and only ſtirs out in the night: he climbs up trees, and hangs on branches by his tail. All travellers agree, that his fleſh is very good eating. He is eaſily tamed, and commonly lives in high places. Theſe animals are found over all America, from Braſil and Guiana, to Louiſiana and the ſouthern parts of Canada; while the porcupine is only to be found in the hotteſt parts of the Old Continent.

By conferring the name of porcupine on the coendou, the ſame faculties have been attributed to him, eſpecially that of ſhooting his quills. It is aſtoniſhing that naturaliſts and travellers ſhould agree on this circumſtance, and that Piſo, who ought to have been leſs ſuperſtitious, as he was a phyſician, ſhould gravely aſſert, that the quills of the coendou pierce into the fleſh by their own power, and penetrate into the body even to the moſt internal viſcera. Ray is the only perſon who has denied theſe circumſtances, although they evidently appear to be abſurd. How many abſurdities have been expoſed by men of ſenſe, which, nevertheleſs, are affirmed by other men who think they are endowed with a greater degree of underſtanding.

SUPPLEMENT.

TO our former account of this animal we may now add that there are two ſpecies of it in Guiana, the one larger than the other; the former weigh from twelve to fifteen pounds and the latter about ſix: their principal food is the leaves of trees, in the holes of which the females bring forth their young; they commonly bring forth two at a time, and yet they are not very numerous. The negroes are very fond of their fleſh, and deſcribe it as extremely good. From the account of M. de la Borde they are ſolitary animals, except in the ſeaſon of love, when they go in pairs; they ſeldom venture to appear during the day, and they find a moſt inveterate enemy in the tiger, who deſtroys them at every opportunity.

THE URSON.

THIS animal has never yet received a diſtinct name; placed by Nature in the deſart part of North America, it exiſts in independence far diſtant from man, and has not even received from him a name, which is the firſt mark of an animal's ſubjection. Hudſon having diſcovered the country where he inhabits, we ſhall give him a name which has an affinity with his firſt maſter, and which, at the ſame time, indicates his ſharp briſtly nature. It was likewiſe neceſſary to give him a name, that he might not be confounded with the porcupine or coendou, which he reſembles in ſome few characters, but ſo materially differs from them in other reſpects that he ought to be looked upon as a different ſpecies. He is alſo a native of the northern climates, while the others particularly belong to that of the ſouth.

Edwards, Ellis, and Cateſby, have all ſpoken of this animal : the figures given by the two firſt agree with ours, and we have no doubt of their being the ſame animal. We are likewiſe ſtrongly inclined to believe, that the figure and deſcription Seba has given, under the name of *the remarkable porcupine of the Eaſt Indies*, and which afterwards Klein, Briſſon, and Linnæus, indicated in their methodical liſts by characters extracted from Seba, might be the ſame animal as we are now treating of. This would not, as we have already obſerved, be the only time that Seba has ſpoken of American animals as belonging to the Eaſt-Indies. However we cannot be ſo poſitive with reſpect to this as we have been with many other animals; all that we can ſay is, that the reſemblances appear to be very great, and the differences very ſlight, and that theſe differences may poſſibly be only varieties between individuals,

dividuals, or ſuch as diſtinguiſh the males from the females.

The *urſon* might be called the *briſtly beaver*, he being of the ſame country, the ſame ſize, and the ſame form of body. He has, like the beaver, two long, ſtrong, and ſharp inciſive teeth at the end of each jaw. Beſides his prickles, which are ſhort, and almoſt covered with hair, like the beaver, he has a double coat, the firſt conſiſts of long and ſoft hairs, and the ſecond of a down, which is ſtill more ſoft and ſmooth. In the young urſons the prickles are proportionably larger, more apparent, and the hair ſhorter and ſcarcer than in the adults.

This animal avoids moiſt places, and is even fearful of wetting himſelf. They make their habitations under the roots of great hollow trees, ſleep very much, and chiefly feed upon the bark of juniper-buſhes. In winter the ſnow ſerves them for drink; and in ſummer they lap water like a dog. The ſavages eat their fleſh, and ſtrip the briſtles off the hide, which they make uſe of inſtead of pins and needles, and clothe themſelves with the fur.

THE TANREC AND THE TENDRAC.

THE *Tanrecs*, or *Tendracs*, are ſmall animals of the Eaſt-Indies, which a little reſemble our hedge-hogs, but ſufficiently differ from them to conſtitute a diſtinct ſpecies. This is ſtrongly proved by its not rolling itſelf up in the ſhape of a ball, like the hedge-hog; and beſides the tanrecs are found at Madagaſcar, where there are alſo hedge-hogs of the ſame ſpecies as ours, which are not called there tanrecs but *ſoras*.

There appears to be two ſpecies of tanrecs, or, perhaps, two different races; the firſt, which is nearly as large as our hedge-hog, has its muzzle proportionably longer than the ſecond; its ears are alſo more apparent, and is more furniſhed with prickles than the ſecond, to which we have given the name of tendrac to diſtinguiſh it from the firſt. The tendrac *(fig. 164.)* is not bigger than a large rat; its muzzle and ears are ſhorter than thoſe of the tanrec, which is alſo covered with ſhorter prickles, but they are as numerous as thoſe of the hedge-hog; the tendrac, on the contrary, has them only on the head, neck, and withers, the reſt of the body being covered with a coarſe hair reſembling the briſtles of an hog.

Theſe ſmall animals, whoſe legs are ſhort, move but ſlowly; they grunt, and wallow in mire like hogs; they are chiefly in creeks and harbours of ſalt water; they multiply in great numbers, and dig themſelves holes in the ground, whither they retire and ſleep for ſeveral months. During this torpid ſtate their hair falls off, which grows again upon their revival. They are uſually very fat, and although their fleſh be inſipid, ſoft, and ſpongy, yet the Indians conſider it as a very great delicacy.

THE GIRAFFE, OR CAMELOPARD.

THE Giraffe (*fig.* 165.) is one of the talleſt, moſt beautiful, and harmleſs animals in nature. The enormous diſproportion of his legs, the fore ones being as long again as thoſe behind, is a great obſtacle to the exerciſe of his powers. His motion is waddling, ſlow, and ſtiff; he can

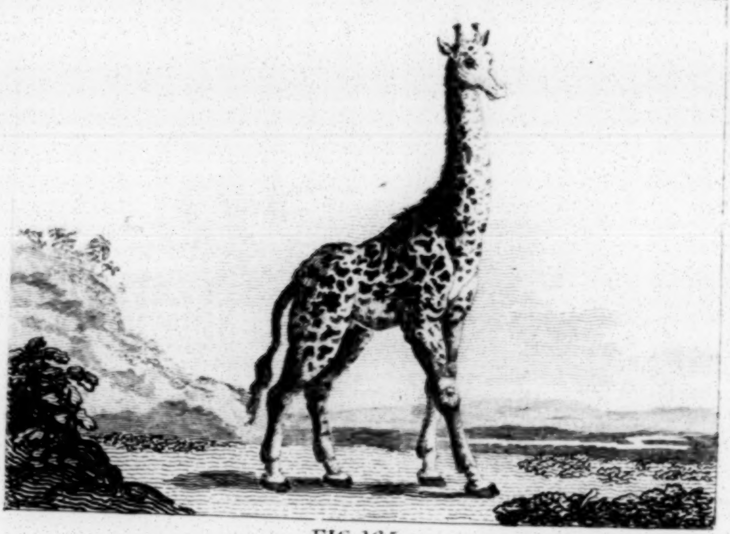
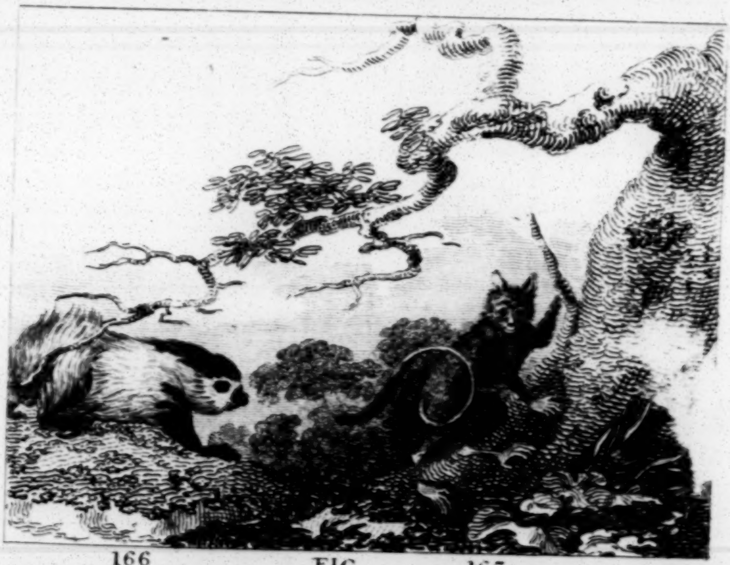


FIG. 165

Giraffe



166 FIG. 167

Two toed Sloth *Tarsier*

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can neither fly from his enemies in a free ſtate, nor ſerve his maſter in a domeſtic one. The ſpecies is not very numerous, and has always been confined to the deſarts of Ethiopia, and to ſome provinces of Africa and India. As theſe countries were unknown to the Greeks, Ariſtotle makes no mention of this animal. Pliny ſpeaks of it, and Oppian deſcribes it in a manner that is far from equivocal. "The camelopardalis (ſays this author) has ſome reſemblance to the camel; it has a ſpotted ſkin like the panther, and a neck as long as the camel; its head and ears are ſmall, its feet broad, and its legs long, but the laſt are very unequal, the fore ones being much longer than thoſe behind, which are ſo ſhort, that when the animal is ſtanding it has ſomewhat the appearance of a dog ſitting upon his poſteriors. There are two prominences upon the head juſt between the ears, which reſemble two ſmall and ſtraight horns. Its mouth is like the ſtag's; its teeth ſmall and white; its eyes full of fire; its tail ſhort, and furniſhed with black hairs at the end." By adding to this deſcription of Oppian thoſe of Heliodorus and Strabo, we ſhall have a ſufficient idea of the camelopard. "The ambaſſadors of Ethiopia (ſays Heliodorus) brought an animal about the ſize of a camel, whoſe ſkin was ſpeckled with beautiful and gloſſy ſpots, the hinder parts were much lower than the anterior; the neck was ſlender, although riſing from a tolerably thick body; the head reſembled that of the camel, and in ſize was ſcarce double that of the oſtrich; the eyes appeared tinctured with different colours. The motion of this animal was different from that of all other quadrupeds, who in walking lift their legs diagonally, that is, the right leg before with the left leg behind; but the camelopard goes naturally in an amble, with its two right or its two left legs pacing together. It is a gentle animal, and may be conducted any where with a ſmall cord tied round its head." "There is (ſays Strabo a large animal in Ethiopia called *camelopardalis*, although it bears no reſemblance to the panther, for its ſkin is not ſpotted in the ſame manner; the ſpots of the panther are circular, and thoſe of this animal are long, and nearly reſembling thoſe of the fawn, or young ſtag. The poſterior parts of its body are much lower than the anterior; ſo that towards the rump it is not higher than the ox, while its ſhoulders are higher than thoſe of the camel. From this diſproportion it cannot run very ſwift. This animal is gentle, does no injury, and feeds upon graſs, leaves, and vegetables." Among the moderns, the firſt good deſcription we meet with is that of Belon. "I have ſeen (ſays he) an animal at the caſtle of Cairo, which is commonly called *zurnapa*; the Latins anciently ſtiled it *camelopardalis*, a name compounded of leopard and camel, for it is ſprinkled with ſpots like the firſt, and has a long neck like the latter. It is a beautiful molded animal, as gentle as a lamb, and more ſociable than any other wild beaſt. It head is almoſt like that of the ſtag, excepting its ſize; on it are two ſmall horns, about half a foot long, covered with hair; thoſe of the male are longer than thoſe of the female. They both have ears as large as thoſe of a cow, and the tongue black, like that of the ox; it has no inciſive teeth in the upper jaw; its neck is long, ſtraight, and ſlender; its horns round; its legs thin and long, but ſo low behind that the animal appears to be ſitting; its feet are like thoſe of the ox; its tail, which hangs down almoſt to its hoof, is round, and the hair on it is three times as thick as that of a horſe; the colour of the hair on the body is white and red; its manner of running is like the camel's; when it runs its two fore feet go together; it lies on its belly, and has a callous ſubſtance on the breaſt and joints like that animal. When it grazes it is obliged to ſpread its fore legs very wide, and even then feeds with great difficulty, therefore it rather chooſes to feed on the leaves of trees than to graze in the fields, eſpecially as its neck is exceeding long, and can reach to a great height."

Gillius's deſcription ſeems ſtill better than that of Belon. " I have ſeen (ſays Gillius, chap. ix.) three camelopards at Cairo; on their heads are two horns ſix inches long, and in the middle of their forehead a tubercle riſes to about the height of two inches, which appears like a third horn. This animal is ſixteen feet high when he holds up his head. Its neck alone is ſeven feet, and it is twenty-two feet long from the tip of the noſe to the end of the tail; its fore and hind legs are nearly of an equal height; but the thighs before are ſo long in compariſon to thoſe behind, that its back inclines like the roof of an houſe. Its whole body is ſprinkled with large yellow ſpots which are nearly of a ſquare form. Its feet are cloven like the ox; its upper lip hangs over the under; its tail is ſlender, with hair on it to the very point; it ruminates like the ox, and, like that animal, feeds upon herbage; its mane extends from the top of the head to the back. When it walks it ſeems as if its legs and flanks on both ſides were alternately lame; and when it grazes, or drinks, it is obliged to ſpread its fore legs prodigiouſly wide."

Geſner affirms, upon the authority of Belon, that this animal ſheds its horns like the deer; but I muſt confeſs that I never could find ſuch a fact aſſerted in that author. He merely ſays, as above, that the horns of the camelopard are covered with hair; and he only ſpeaks in one other place of that animal, namely, when treating of the axis, where he ſays, "The camelopard has a white ſkin, with broad ſpots ſprinkled over it, which though red are not ſo deep as thoſe of the axis." This fact, which however I have not been able to meet with in any part of Belon's work, would be of great importance to decide the nature of the giraffe, for if it ſheds its horns every year it belongs to the ſtag kind; and, on the contrary, if its horns are permanent, it muſt be conſidered as belonging to the ox or goat ſpecies; therefore, without a preciſe knowledge of this matter, we cannot aſſert, as our nomenclators have done, that the giraffe is of the ſtag genus; and we are not a little ſurpriſed that Haſſelquiſt, who has given a very long, though dry deſcription of this animal, has been ſilent as to its nature.

After having methodically, that is to ſay, ſcholaſtically, heaped together an hundred uſeleſs and trifling characters, he does not ſay a ſingle word on the ſubſtance of the horns, and leaves us ignorant whether they are ſolid or hollow, or whether they fall off or not. I refer to the deſcription of Haſſelquiſt, not for its utility but for its ſingularity, and to excite travellers to make uſe of their own ſight, and not to view objects through the medium of thoſe of other men.

In the year 1764 a drawing and an account of the giraffe was ſent to the Academy of Sciences, by which we are informed that this animal is not particular to Ethiopia, but is alſo found in the neighbourhood of the Cape of Good Hope*. The drawing was ſo badly executed that no uſe can be made of it†, but as the account contains a ſort of deſcription we have given it a place. " In an excurſion from the Cape, made in 1702, we travelled about two hundred leagues up the country, and met with the *camelopardalis*, a drawing of which we have ſubjoined. Its body reſembles that of an ox, and its head and neck thoſe of the horſe. All we met with were of a white colour, ſprinkled with brown ſpots. They have two horns on the head, about half a foot long, and their feet are hoofed. We killed two of theſe animals, and ſent their ſkins to Europe, one of which meaſured as follows: the length of the head one foot eight inches; the height, from the bottom of the fore-foot to the withers, ten feet; and from the withers to the top of the head ſeven feet; in all ſeventeen feet in height. The length from the withers to the reins is five feet ſix inches, and from thence to the tail one foot ſix; the length, therefore, of the whole body is ſeven feet, and the height, from the hind feet to the reins, eight feet ſix inches. The great diſproportion in the height and length of this animal ſeems to prevent its being of any ſervice. It feeds on the leaves of trees, and when it wants to drink it is obliged to kneel with its fore legs."

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* Vaillant alſo, in his travels into the interior parts of Africa, aſſerts, that he met with giraffes in very great numbers.

† This we have alſo obviated, our figure being from a drawing taken by M. Vaillant from life.

In inſpecting the accounts travellers have given of the giraffe, I find they all agree that it can reach with its head to the height of ſixteen or ſeventeen feet when ſtanding erect, and that the fore legs are as high again as the hind ones, ſo that it ſeems as if it was ſeated upon its crupper. They likewiſe agree that it cannot run very ſwift, by reaſon of this diſproportion; that it is very gentle, and that by this quality, other habits, and even by the ſhape of the body, it partakes more of the natare of the camel than of any other animal; that it is among the number of ruminating animals, and, like them, is deficient of the inciſive teeth in its upper jaw. By the teſtimonies of ſome travellers we alſo find that the giraffe is to be met with in the ſouthern parts of Africa, as well as in thoſe of Aſia.

It is very clear, from what we have mentioned, that the giraffe is a peculiar ſpecies, and very different from every other animal. If we would refer it to any it ſhould rather be to the camel than to the ſtag, or the ox. It is true the giraffe has two horns, and the camel none; but they reſemble each other ſo much in other reſpects, that I am not ſurpriſed at ſome travellers having given it the name of the *Indian camel.* We are ignorant of the ſubſtance of the horns of the giraffe, and, conſequently, we know not if in that part he approaches nearer to the ſtag than to the ox; and, poſſibly, they may be of a ſubſtance different from either; they may be compoſed of united hairs like thoſe of the rhinoceros, or of a ſubſtance and texture peculiar to themſelves.

The reaſons which have induced nomenclators to rank the giraffe with the ſtag kind, ſeem to have ariſen from the pretended paſſage of Belon, quoted by Geſner, which indeed would be deciſive if it was true. They ſeem alſo to have miſunderſtood what authors have ſaid of the hair of thoſe horns; they have imagined that the writers have ſaid the horns of the giraffe were covered with hair, like the freſh-ſprung horns of the ſtag, and from thence concluded they were of the ſame nature; but we ſee, on the contrary, from our former quotations, that the giraffe's horns are only ſurrounded with coarſe hair, and not covered with a down, or velvet, like thoſe of the ſtag. This circumſtance tends to ſupport the probability that the horns of the giraffe are compoſed of united hair, like thoſe of the rhinoceros, and their bluntneſs at the extremities greatly favours this idea. If, again, we conſider that the elk, rein-deer, ſtag, roe-buck, &c. have their horns always divided into branches or antlers, and that, on the contrary, the horns of the giraffe are only ſimple, and conſiſt of one ſtem, we muſt be convinced that they are not of the ſame nature, unleſs analogy is entirely violated. The tubercle in the middle of the head, which ſeems to form a third horn, is another ſtrong circumſtance in favour of this opinion. The two horns which are not pointed, but blunt at the ends, are, perhaps, only tubercles ſomewhat longer than the former. Travellers inform us that the female giraffes have horns like the males, but that they are ſmaller. If this animal was really of the ſtag kind, analogy would here alſo be violated, for of all animals of that genus there is only the female rein-deer that has horns, the reaſon of which we have before mentioned. On the other hand, as the giraffe cannot graze but with great difficulty, on account of the exceſſive height of its fore legs; as it chiefly and almoſt ſolely feeds on the leaves and buds of trees, it may be preſumed, that the horns, which are the moſt apparent ſuperfluity of the organic particles derived from the food, poſſeſs its nature, and are of a ſubſtance analogous to wood as well as the horns of the ſtag. Time will confirm the propriety of one or other of theſe conjectures. One word more in Haſſelquiſt's deſcription would have fixed theſe doubts, and clearly determined the genus of this animal. But ſcholars, who have only the gamut of their maſter in their heads, or rather in their pockets, cannot avoid making blunders and eſſential omiſſions, becauſe they entirely renounce inveſtigation, which ſhould guide every obſerver of Nature, and only view her productions through the falſe medium of arbitrary method, which only ſerves to hinder them from reflecting on the objects they meet with, and to calculate the deſcription of them on a bad and erroneous model. As, in reality, all objects differ materially one from another, they muſt all be treated differently. One ſingle ſtriking character happily diſcovered ſometimes decides, and often conveys more knowledge of a ſubject than a thouſand trifling indexes. Whenever they are numerous they conſequently become equivocal and common, and then they are at leaſt ſuperfluous, if not prejudicial, to the real knowledge of Nature, who ſports with the forms we preſcribe, ſoars above all method, and can only be perceived by the penetrating eye of Genius.

SUPPLEMENT.

FROM M. Allemand we received a letter, dated October, 1766, containing a number of excellent obſervations reſpecting this animal, and from which the following is an extract:

" I am in poſſeſſion of a ſtuffed giraffe, and ſince you expreſſed a deſire to know the nature of its horns I cut one of them off, and have ſent it you; it is, however, neceſſary to obſerve, that it belonged to a very young animal. I received it from the governor of the Cape, who informed me that it was killed as it was lying by the ſide of its mother; it was about ſix feet in height, and its horns did not exceed two inches and a half. Theſe horns were covered all over with ſkin and hairs; the baſe was more than an inch broad, forming an obtuſe cone; and to be certain whether it was ſolid or hollow I ſawed it through longitudinally with that part of the ſkull to which it adhered; and I found its texture to reſemble that of the horns of the ſtag more than any other animal; and if I was poſitive that a horn which was ſent to me as of the giraffe did really belong to that animal, I ſhould not heſitate to ſay there was no difference between them, except in the figure, this being ſtraight, and without branches. With reſpect to the legs I conceive their diſproportion in length has been greatly magnified, for the difference between the fore and hind ones of this young animal is very ſlight."

The horns of the giraffe being ſolid, and their ſubſtance ſimilar to thoſe of the ſtag, there could be no doubt of his ranking in the ſame genus, eſpecially if he ſheds his horns annually, of which, however, we are ſtill uncertain; but we may ſafely aſſert he ought to be ſeparated from that of the ox, and all thoſe animals whoſe horns are hollow; and, indeed, until the contrary is proved to be the fact, we cannot do otherwiſe than conſider the giraffe as a peculiar ſpecies, in the ſame manner as is the caſe with the elephant, rhinoceros, and hippopotamus, and forming a ſpecies which has no collaterals, and which ſeems to be a privilege conferred by Nature ſimply on thoſe which are of the largeſt magnitude.

In the deſcription of M. Alleman we freely acknowledge that he has diſplayed much accuracy, and a perfect intimacy with the ſubject; but yet I apprehend that the longeſt of the horns he did me the favour to tranſmit does not belong to a giraffe, for the ſhort one is very thick, and that quite thin, comparatively with their different lengths. In an anonymous deſcription I received of this animal from Holland it is ſtated, that the horns of a full-grown giraffe are a foot long, and as thick as a man's arm; according to which the horn we are now conſidering being ſix inches long, it ought to be full twice as thick, as is, in reality, the fact; and, indeed, it ſo perfectly reſembles the firſt horns of a young ſtag, that we can have little doubt of its belonging to that animal.

As to the nature of the giraffe's horns I feel no heſitation in coinciding with the opinion of M. Allemand. The protuberance on the front is oſſeous, and may be conſidered as a third horn; and as the horns adhere to the cranium, they ſhould be conſidered as oſſeous prolongations of the head. In ſhort, the horn of the giraffe appears to be a bone, differing from that of the ox by its covering, the latter being entirely ſurrounded with a horny ſubſtance, and the former with hair and ſkin.

THE LAMA AND THE PACOS.

THERE are examples in every language, of two different names being applied to the ſame animal, one of which has a relation to its wild ſtate, and the other to its domeſtic. The wild boar and the hog are the ſame animal, under two names, no ways relative to any difference in their natures, but to the condition of the ſpecies; one part of which is under the power of man, and the other independent. It is the ſame with reſpect to the lamas and the pacos, which were the only domeſtic animals of the ancient Americans: theſe names belonged to them in their domeſtic ſtate. The wild lama was called huanacus, or guanaco; and the wild pacos, vicuna, or vigogne. I conceived this remark neceſſary to avoid the confuſion of names. Theſe animals are to be found only in the New World: they ſeem even to belong to ſome particular parts, beyond the limits of which they are never to be ſeen. They appear confined to that chain of mountains which ſtretches from New Spain to Terra Magellanica: they inhabit the higheſt regions of the globe, and ſeem to require a purer and more rarefied air than that of our higheſt mountains.

It is ſingular, that although the lama and the pacos are domeſtic in Peru, Mexico, and Chili, as the horſes are in Europe, or the camels in Arabia, we ſcarcely know any thing of them; and notwithſtanding the Spaniards have had poſſeſſion of thoſe vaſt countries for above two centuries, not one of their authors have given us complete hiſtories, nor an exact deſcription of theſe animals. It is indeed pretended that they cannot be tranſported into Europe, nor even be brought from their heights, without, at leaſt, riſking their lives in a ſhort time; but at Quito, Lima, and many other towns, where perſons of literature reſide, they might have deſigned, deſcribed, and diſſected theſe animals. Herrera ſays but very little about them, and Garcilaſſa only ſpeaks from other authors. Acoſta and Gregoire de Bolivar have made the greateſt collections of facts relative to the natural diſpoſitions of the lamas, and the advantages to be derived from them; but they have left us in the dark as to their interior conformation, and of the length of time they go with young; whether the lama and the pacos are two ſpecies abſolutely ſeparate from each other; whether they mix together, or whether there are any intermediate breed, and a number of other facts neceſſary to render their hiſtory complete

Although it is pretended theſe animals die if they are removed from their native country, it is certain that after the conqueſt of Peru, ſome of them were tranſported into Europe. The animal ſpoken of by Geſner, by the name of *allocamelus*, and of which he has given a figure, is a lama, which was brought alive from Peru to Holland, in 1558. It is the ſame with that Matthiolus mentions by the name of *elaphocamelus*, the deſcription of which he has given with great care and accuracy. The pacos, and, perhaps, alſo the lamas, have been often tranſported into Spain, to endeavour to naturalize them. We ought, therefore, to be better informed of the nature of theſe animals, which might prove very uſeful to us; for, probably, they would thrive as well upon the Pyrenean and Alpine mountains as on the Cordeliers.

Peru, according to Gregoire de Bolivar, is the native country of the lamas: they have been conducted into other provinces, as New Spain, &c. but this is rather more for curioſity than utility. But in Peru, from Potoſi to Coracas, theſe animals are in great numbers; they conſtitute the chief riches of the Indians, and add not a little to the wealth of the Spaniards, who rear them. Their fleſh is excellent food; their wool may be ſpun into beautiful cloathing; and they are capable of carrying heavy loads in the moſt rugged and dangerous ways. The ſtrongeſt of them will travel with from one hundred and fifty, to two hundred and fifty pounds weight on their backs; their pace is but ſlow, and their journey is ſeldom above fifteen miles a day; but, then, they are ſure-footed, deſcend precipices, and travel ſafely among the moſt craggy rocks, where even men can ſcarce accompany them. They commonly travel for five days together, and then they are obliged to reſt, which they do of their own accord for two or three days before they reſume their journey. They are much employed in carrying the riches dug out of the mines of Potoſi. Bolivar affirms, that in his time above three hundred thouſand of theſe animals were thus kept in actual employ.

The growth of the lama is very quick, and its life is but of ſhort duration. This animal couples at three years of age, and remains ſtrong and vigorous till twelve, after which it begins to decline, and becomes entirely uſeleſs by fifteen. Their nature appears modelled on that of the Americans; they are gentle and flegmatic, and do every thing with the greateſt leiſure and caution. When they ſtop on their journies to reſt, they bend their knees very cautiouſly, in order to lower their bodies without diſordering their load; and as ſoon as they hear their driver whiſtle, they riſe up again with the ſame precaution, and proceed on their journey. They feed as they go along on the graſs they meet with in their way; but they never eat in the night, making uſe of that time to ruminate. When they ſleep or ruminate, they reſt with their feet folded under their bellies. When overloaded, or fatigued, they ſink down, and will not riſe again though the driver ſtrikes them with his utmoſt force. His laſt reſource is to compreſs their teſticles; this often is of no effect, and if the driver continues his torments the animal grows deſperate, and kills himſelf by violently beating his head againſt the earth: they do not make any defence either with their feet or teeth, and it may be ſaid, they have no other arms than thoſe of indignation. When perſecuted they throw out a ſaliva againſt thoſe who oppreſs them; and the Indians ſay, that this ſaliva is of ſuch an acrimonious nature, as to cauſe very dangerous eruptions on the ſkin.

The lama is about four feet high; its body, comprehending the neck and head *, is five or ſix feet long. The head is ſmall and well-proportioned; the eyes large, the noſe ſomewhat long, the lips thick, the upper one being divided

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* Their necks are as long as thoſe of the camel, to which animal they have a great reſemblance, excepting the bunch on the back.

ed, and the under a little pendulous. He has neither inciſive nor canine teeth in the upper jaw. His ears are four inches long, which he moves with great agility. His tail is ſeldom above eight inches long; ſmall, ſtraight, and a little turned up at the end. He is cloven footed, like the ox, but has a kind of ſpur behind, which aſſiſts the animal to ſupport himſelf over precipices and rugged ways. His back, crupper, and tail, are cloathed with a ſhort wool, but it is very long on the belly and ſides. Theſe animals differ in colour; ſome are white, others black, but moſt of them a mixed brown. The dung of the lamas is like that of the goat. The genital members in the male are ſlender and turned back, ſo that it urines backwards; they are much inclined to venery, although they copulate with difficulty. The female has a very ſmall aperture, ſhe proſtrates herſelf to receive the male, whom ſhe invites with her ſighs; but a whole day is ſometimes paſſed before they can accompliſh their purpoſe; and all this time is ſpent in growling, quarrelling, and ſpitting at each other; and as theſe long preludes fatigue them, the Indians aſſiſt them to commence the operation. They ſeldom produce more than one at a time. The mother has but two teats, and the young one follows her as ſoon as it is brought forth. The fleſh of the young lamas is excellent food, but that of the old ones is dry and tough. In general, both the fleſh and wool of the domeſtic lamas is preferable to that of the wild: their ſkin is firm: the Indians make their ſhoes of it, and the Spaniards uſe it for harneſs. Theſe uſeful, and even neceſſary, animals in the countries they inhabit, are attended with no expence to their maſters; as they are cloven-footed, they do not require to be ſhoed, and their wool renders ſaddles unneceſſary. Satisfied with a ſmall portion of vegetables and graſs they want neither corn nor hay; and they are ſtill more moderate in what they drink, as their mouths are continually moiſtened with ſaliva, which they have in a greater quantity than any other animal.

The huanacus, or wild lamas, are ſtronger, briſker, and ſwifter, than the domeſtic ones; they run like a ſtag, and climb over the moſt craggy precipices like the goat: their wool is ſhorter, and their colour tawny. Although theſe animals are entirely in a ſtate of freedom, they aſſemble in herds, ſometimes to the number of two or three hundred. When they ſee any of the human ſpecies, they regard him at firſt with aſtoniſhment, without marking any fear or ſurprize; but ſhortly, as if by common conſent, they blow through their noſtrils, neigh ſomewhat like horſes, and then by a general flight, they take refuge on the tops of the mountains. They are fonder of the north than the ſouth ſide of the hills. They climb, and often remain above the ſnowy tracts of the mountains; and when travelling on the ice covered with the hoar-froſt, they ſeem in the beſt condition, and appear vigorous in proportion to the coldneſs of their ſituation. The natives hunt the wild lama for the ſake of its fleece: the dogs have much trouble to follow them; and if they can gain the rocks, both hunters and dogs are obliged to deſiſt in their purſuit. They are very numerous all along the chain of the Cordeliers which are full 3000 fathoms above the level of the ſea at Peru, and preſerve that elevation from Chili, to the ſtraits of Magellan; but on the coaſt of New Spain, where the mountains ſink in height, none of theſe animals are to be found.

The pacos are a ſubordinate kind to the lamas, much in the ſame proportion as the aſs is to the horſe: they are ſmaller, and not ſo ſerviceable, but their fleeces are more uſeful. Their wool is fine and long, and is a ſort of merchandiſe, as valuable as ſilk. When in a domeſtic ſtate they are called *alpagues*; they are then ſometimes black, or brown mixed with yellow, but the natural colour of the pacos is that of a dried roſe-leaf, which is ſo fixed, that it undergoes no alteration under the hands of the manufacturer. They not only make good gloves and ſtockings of this wool, but alſo form it into quilts and carpets, which ſell at a very high price, and form a valuable part of the Spaniſh commerce.

The pacos poſſeſs many things in common with the lamas, they belong to the ſame country, are of the ſame diſpoſitions, manners, and nearly the ſame temperament; they alſo reſemble the lamas in their figure; being however ſmaller, their legs ſhorter, and their muzzles thicker and cloſer: they have no horns; they inhabit and paſture on the higheſt parts of the mountains. Snow and ice ſeems rather to refreſh than to be inconvenient to them: they keep together in flocks, and run very ſwift; they are very timid, and as ſoon as they perceive any perſon they take flight, driving their young before them. The ancient monarchs of Peru rigorouſly prohibited the hunting of them, becauſe they multiply ſo ſlowly; but ſince the arrival of the Spaniards in thoſe parts their number is greatly decreaſed. The fleſh of theſe animals is not ſo good as that of the huanacus, and they are only ſought after for their fleece, and the bezoars they produce. The method of taking them, proves their extreme timidity, or rather their weakneſs. The hunters drive a flock of them into a narrow paſſage, acroſs which they have ſtretched cords about four feet from the ground, with a number of pieces of linen or woollen cloth hanging to them. The animals are ſo intimidated at theſe rags, agitated by the wind, that they ſtop, and crouding together in a heap, great numbers of them are killed with the greateſt eaſe. But if there happen to be any huanacus among the flock, as they are leſs timid than the pacos, they leap over the cords; the example is immediately followed by the whole groupe, and then they eſcape from their purſuers.

In reſpect to the domeſtic pacos, they are employed to carry burdens, like the lamas; but they carry much leſs weight even in proportion to their ſize. They are likewiſe of a more ſtubborn nature, and when once they lie down with their load, they will ſuffer themſelves to be cut to pieces ſooner than riſe. The Indians never make uſe of the milk of theſe animals, becauſe they have ſcarce enough to ſupply their own young. The great profit derived from their wool, induced the Spaniards to endeavour to naturalize them in Europe: they tranſported numbers of them into Spain, but the climate not agreeing with their nature, not one of them lived: nevertheleſs, I am perſuaded, as I have already obſerved, that theſe animals might live and procreate upon our mountains, eſpecially upon the Pyrennees. Thoſe who brought them into Spain, did not conſider that they cannot exiſt even in Peru, but in the cold regions; that is on the tops of the higheſt mountains; that they are never to be found in the vallies, and die if brought into warm countries. That on the contrary, they are ſtill very numerous in the neighbourhood of the Straits of Magellan, where the cold is much greater than in the ſouth of Europe; and that, conſequently, in order to preſerve them, they ſhould be landed, not in Spain, but in Scotland, or even in Norway; or probably with greater certainty at the foot of the Pyrenean, Alpine, or other mountains, where they might climb to the region that moſt agrees with their nature. I have dwelt on this ſubject, becauſe I imagine theſe animals would prove an excellent acquiſition to Europe, and would produce more real advantage than all the metals of the new world, which only load us with an uſeleſs weight; as before the diſcovery of thoſe mines, a penny weight of gold or ſilver, was of as much value as an ounce is at this preſent time.

Animals which feed upon vegetables, and live on the high mountains of Aſia and Africa, produce the oriental bezoar, the virtues of which are ſo highly extolled. The animals of the mountains of Europe, where the qualities of the plants are more temperate, only produce the *ægagropiles*; and in South America thoſe animals which dwell upon the mountains of the torrid zone, afford another kind of bezoar, called *occidental*, more ſolid, and perhaps poſſeſſing greater virtues than the *oriental*. The wild pacos produce it in great quantities, as do the huanacus; and they are alſo extracted from the ſtags or roe-bucks of New Spain. The lamas and the pacos afford the beſt bezoar when in their natural or wild ſtate: thoſe produced in their ſtate of ſlavery are ſmall, black, and of but little or no virtue. The beſt bezoars are thoſe of a dark green colour, which commonly proceed from the wild pacos, eſpecially thoſe which feed in the ſnow on the tops of the mountains. Of theſe, both the male and female produce bezoars; and theſe Peruvian bezoars are the next in rank to the oriental, and are much more eſteemed than thoſe of New Spain, which are produced by ſtags, and are the leaſt efficacious of any.

THE UNAU, OR FOUR-TOED, AND THE AÏ, OR THREE-TOED, SLOTHS.

THESE two animals have had the name of *Sloths* given to them by reaſon of their ſlowneſs, and the difficulty with which they walk. Though they reſemble each other in many reſpects, nevertheleſs they differ externally and internally by ſuch ſtrong characters that it is impoſſible to miſtake the one for the other, or doubt of their being very diſtinct ſpecies. The unau *(fig.* 166.*)* has no tail, and only two claws on the fore feet. The aï has a ſhort tail, and three claws on each foot. The noſe of the unau is likewiſe longer, the forehead higher, and the ears larger than the aï. They differ alſo in the hair. Some parts of their viſcera are formed and ſituated different; but the moſt diſtinct and ſingular character is, the unau has forty-ſix ribs, and the aï but twenty-eight; this alone proves them to be two ſpecies quite diſtinct from each other. Theſe forty-ſix ribs in an animal whoſe body is ſo ſhort is a kind of exceſs, or error, in nature; for even in the largeſt animals, and thoſe whoſe bodies are relatively longer than they are thick, not one of them is found to have ſo many; the elephant has only forty, the horſe thirty-ſix, the badger thirty, the dog twenty-ſix, the human ſpecies twenty-four, &c. This difference in the conſtruction of the ſloths ſuppoſes a greater diſtance between theſe two ſpecies than there is between the cat and dog, which both have the ſame number of ribs, for external differences are nothing in compariſon with the internal ones. The internal frame of living animals being the groundwork of Nature's deſign, it is the conſtituent form, and the cauſe of all figure; and the external parts are only the ſurface or drapery. In our comparative examination of animals, how many have we ſeen who often differed very much in their outward appearance and yet were perfectly alike internally; and, on the contrary, the leaſt internal diſtinction has produced great external differences, and even changed the natural habits, faculties, and the attributes of the animal? How many alſo are there armed, cloathed, and ornamented with excreſcent parts, which, nevertheleſs, in their internal organization entirely reſemble others who are deficient of them? but we ſhall not here dwell on this ſubject, which ſuppoſes, not only a reflected compariſon, but alſo an expoſition of all the parts of organization; we ſhall only obſerve, that in proportion as Nature is lively, active, and exalted in the ape ſpecies, ſhe is ſlow, conſtrained, and cramped in the ſloths. Theſe animals have neither inciſive nor canine teeth; the eyes are dull, and almoſt concealed with hair; their mouths are wide, and their lips thick and heavy; their fur is coarſe, and looks like dried graſs; their thighs ſeem almoſt disjointed from the haunches; their legs very ſhort and badly ſhaped; they have no ſoles to their feet, nor toes ſeparately moveable, but only two or three claws exceſſively long and crooked downwards, which move together, and are only uſeful to the animal in climbing. Slowneſs, ſtupidity, and even habitual pain, reſult from its uncouth conformation. They have no arms either to attack or defend themſelves; nor are they furniſhed with any means of ſecurity, as they can neither ſcratch up the earth nor ſeek for ſafety by flight, but confined to a ſmall ſpot of ground, or to the tree under which they are brought forth, they remain priſoners in the midſt of an extended ſpace, unable to move more than three feet in an hour; they climb with difficulty and pain; and their plaintive and interrupted cry they dare only to utter by night. All theſe circumſtances announce their wretchedneſs, and call to our mind thoſe imperfect ſketches of Nature, which, having ſcarcely the power of exiſtence, only remained a ſhort time in the world, and then were effaced from the liſt of beings. In fact, if it was not a deſart country where the ſloths exiſt, but had long been inhabited by man and powerful animals, they would not have deſcended to our time; the whole ſpecies would have been deſtroyed, as at ſome future period will certainly be the caſe. We have before obſerved, that it ſeems as if all that could be done by Nature did exiſt, and of which the ſloths appear to be a ſtriking proof. They conſtitute the laſt term of exiſtence in the order of animals endowed with fleſh and blood. One more defect and they could not have exiſted. To look on theſe unfiniſhed creatures as equally perfect beings with others; to admit final cauſes for ſuch diſparities, and from thence to determine Nature to be as brilliant in theſe as in her moſt beautiful animals, is only looking at her through a very confined tube, and making its ſight the final limit of our judgment.

Why ſhould not ſome animals be created for wretchedneſs, ſince in the human ſpecies the greateſt number are devoted to pain and miſery from their birth? To ſay the truth, evil is more our own production than that of Nature. For one man who is unhappy from being born weak and deformed, thouſands are rendered ſo by the oppreſſion and cruelty of their fellow-creatures. Animals are, in general, more happy, becauſe each ſpecies has nothing to dread from their individuals; to them there is but one ſource of evil, but to the human ſpecies there are two. Moral evil, which he has given riſe to himſelf, is a torrent which is increaſed into a ſea, whoſe inundation covers and afflicts the whole face of the earth. Phyſical evil, on the contrary, is confined to very narrow limits; it ſeldom appears alone or unaccompanied with an equal if not a ſuperior good. Can animals be denied happineſs when they enjoy freedom, and have the faculty of eaſily procuring ſubſiſtence, when they are leſs ſubject to ill health, and poſſeſs the neceſſary or relative organs of pleaſure in a more eminent degree than the human ſpecies? In theſe reſpects animals in general are very richly endowed; and the degraded ſpecies of the ſloths are, perhaps, the only creatures to whom Nature has been unkind, and the only ones which preſent us the image of innate miſery and wretchedneſs.

Let us now *inſpect* their condition more cloſely; being unfurniſhed with teeth they cannot ſeize any prey, nor feed upon fleſh or vegetables: reduced to live on leaves and wild fruits, they conſume much time in crawling to a tree, and ſtill more in climbing up to the branches; and during this ſlow and painful labour, which ſometimes laſts many days, they are obliged to ſupport the moſt preſſing hunger. When they have accompliſhed their end they cling to the tree, crawl from branch to branch, and, by degrees, ſtrip every twig of its leaves. In this ſituation they remain ſeveral weeks without any liquid. When they have conſumed the ſtore, and the tree is entirely naked, they ſtill continue, unable to deſcend, until the preſſure of hunger becomes more powerful than the fear of danger or death, they ſuffer themſelves to fall to the ground like an inanimate maſs, without being capable of exerting any effort to break the violence of the fall.

When on the ground theſe animals are expoſed to all their enemies, and as their fleſh is not abſolutely bad they are ſought after both by men and beaſts of prey. They ſeem to multiply but little, or if they produce often it is only a ſmall number at a time, as they are furniſhed with but two teats: every thing concurs, therefore, to their deſtruction, and the ſpecies ſupports itſelf with great difficulty. Although they are ſlow, heavy, and almoſt incapable of motion, yet they are hardy, ſtrong, and tenacious of life; they can abſtain a long time from food; they are covered with a thick, coarſe fur, and being unable to take much exerciſe they waſte little by perſpiration, and therefore they fatten by reſt, however poor their food. Though they have neither horns nor hoofs, nor inciſive teeth in the lower jaw, they belong, notwithſtanding, to the number of ruminating animals, and have four ſtomachs, ſo that they may compenſate for the quality of their food by the quantity they take at a time. What is ſtill more ſingular, inſtead of having, like other ruminating animals, very long inteſtines, they are very ſhort, like thoſe of the carnivorous kind. The ambiguity of Nature ſeems ſomewhat diſcovered by this contraſt. The ſloths are certainly ruminating animals, as they have four ſtomachs; but they are deficient in all the other external and internal characters which belong to all animals in that claſs. There is alſo another ſingularity in theſe animals, inſtead of diſtinct apertures for the diſcharge of the urine, excrements, and the purpoſes of generation, theſe animals have but one, which terminates in a common canal, as in birds.

Finally, if the miſery which reſults from a defect of ſenſation is not the greateſt of all, the miſerable ſtate of theſe animals, although very apparent, ſeems not to be real, for they appear to have little or no ſenſation, and their dull and heavy look, their indifference to blows, which they receive without being in the leaſt affected, prove their inſenſibility. But what ſtill further demonſtrates this fact is, their not inſtantly dying upon their hearts and bowels being taken out. Piſo, who made this cruel experiment, ſays, that the heart, after being ſeparated from the body, beat forcibly for more than half an hour, and that the animal continued to contract its limbs in the ſame manner as when aſleep. By theſe facts, this quadruped approaches not only the tortoiſe but alſo other reptiles who have no diſtinct centre of ſenſation: thus all theſe animals are miſerable without being unhappy; and Nature, even in her moſt unfiniſhed productions, appears always to act more as a real parent, than a ſtep-mother.

Both theſe animals belong to the ſouthern parts of the New Continent, and are never to be met with in the Old. We have already obſerved, that the editor of Seba's cabinet was deceived in calling the unau by the name of the *Ceylon ſloth*. This error, which has been adopted by Klein, Linnæus, and Briſſon, is now more evident than formerly. The Marquis de Montmirail has a living unau, which was brought him from Surinam: thoſe in the royal cabinet came from the ſame place, and from Guiana; and I am perſuaded, that both ſpecies exiſt in the deſarts of America, from Braſil to Mexico; but as it never inhabited the northern countries, it could not have paſſed from one continent to the other; and if theſe animals have been ſeen, either in the Eaſt Indies, or on the coaſt of Africa, it is certain, that they muſt have been tranſported thither. They can endure neither cold nor rain; the change from wet to dry ſpoils their fur, which then reſembles bad dreſſed hemp, rather than wool or hair.

I cannot conclude this article better than by the obſervations which the Marquis de Montmirail communicated to me concerning the unau, which had been above three years in his menagery. " The fur of the unau is much ſofter than that of the aï. It is to be preſumed, that what travellers have ſaid of the exceſſive ſlowneſs of the ſloths, only belongs to the aï. The unau, although of very heavy, and of an exceſſive aukward motion, aſcends and deſcends the higheſt tree many times in a day: he is moſt active in the evening and during the night, which makes it probable that he ſees but badly in the day, and that his eyes are of no uſe to him but in the dark. When I bought this animal at Amſterdam, it was fed with ſea biſcuit, and I was told, that when the winter was over, and the verdure began to appear, it would require nothing but leaves. We ſupplied him with leaves which he eat freely while they were green and tender; but the moment they began to be dry, ſhrivelled, or worm-eaten, he refuſed them. During the three years I preſerved him in my menagery, his common food was bread, apples, and roots; and his drink always milk. He always took his food in one of his fore claws, but with difficulty, and which was encreaſed proportionally by the ſize. His cry, though plaintive and melancholy, does not reſemble that of the aï; it is ſhort, and ſeldom uttered. The moſt natural ſituation of the unau, and which he prefers to all others, is ſuſpending himſelf on a branch of a tree, with his body downwards. He ſometimes even ſleeps in this poſition, his four claws faſtened on the ſame point, and his body deſcribing the figure of a bow. The ſtrength of his muſcles is incredible; but it becomes uſeleſs to him when he walks. This formation alone ſeems to be the cauſe of the ſlowneſs of this animal, who beſides has no violent ſenſation, and does not recognize the hand that feeds him."

SUPPLEMENT.

WE have been informed by M. de la Borde, that in Cayenne there are two ſpecies of Sloths, whoſe principal differences conſiſt in the length of their bodies, the one, which is called the *ſheep ſloth*, being nearly twice as long as the other, known by the name of the *baſhful ſloth*. The firſt has buſhy hair of a dirty white; he

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It is plain from the above deſcription, that the ſheep ſloth is the ſame as that we have ſpoken of under the name of the unau, and that this baſhful ſloth is our aï.

M. Voſmaër has denied the aſſertion in my hiſtory of theſe animals, that they are unable to deſcend from a tree, but allow themſelves to drop down like inanimate blocks ; I had the fact from eye-witneſſes, and it is now ſupported by the teſtimony of M. de la Borde. With reſpect to my other aſſertion, that the ſloths have no teeth, I readily admit my miſtake, and feel myſelf indebted to M. Voſmaër for correcting the error.

THE SURIKAT.

THIS animal was purchaſed in Holland by the name of the *Surikat*. It is a native of Surinam, and other provinces of South America. We kept one for ſome time; and afterwards delivered it to M. de Sevé, who has ſo carefully drawn the animals in this Work. during the time that gentleman kept him alive, he made ſome remarks of his natural habits, which he communicated to me. This animal is very handſome, lively, and ſubtle ; he ſometimes walks on his hind legs, and often ſits upright

right on them, with his fore paws hanging down, his head erect, and moving on the neck as on a pivot. He always aſſumed that poſture when he came near the fire for warmth. He is not ſo big as a rabbit, and nearly reſembles the ichneumon in ſize and hair; his tail is ſomewhat ſhorter. His ſnout is prominent and raiſed; and by which character he is more like the coati than any other animal. He has alſo a character peculiar to him and the hyæna; as theſe two are the only animals who have four toes to every foot.

At firſt we fed this animal with milk, as he was very young; but his inclination for fleſh ſoon ſhewed itſelf. He ate raw meat with eagerneſs, and was particularly fond of poultry. He alſo endeavoured to ſeize young animals. A ſmall rabbit would have fallen a prey to him if he had not eſcaped. He was very fond of fiſh, and ſtill more of eggs. He would take out eggs that were put in water to be boiled, and carry them off with his paws. He would eat neither fruit nor bread. He uſed his fore-feet, like a ſquirrel, to carry food to his mouth. He lapped his drink like a dog, but would not touch water unleſs it was luke-warm. His common drink was his own urine, although of a very ſtrong ſmell. He played with cats with the greateſt familiarity. He did no injury to children, and never bit any perſon in the houſe but his maſter, againſt whom he had taken an averſion. He never gnawed with his teeth, but often ſcratched plaiſter and furniture with his nails. He was ſo well tamed, that he anſwered to his name, when called, and went looſe about the houſe. He had two kinds of voices, one like the barking of a young dog, when it was left long alone, or heard an unuſual noiſe; and when careſſed, or deſirous of expreſſing pleaſure, he made a noiſe as ſtrong as that of a rattle briſkly turned. This was a female animal, and only lived one winter, notwithſtanding all the care that was taken to feed and keep her warm.

SUPPLEMENT.

BESIDES the maſter of the houſe, which we formerly obſerved, we have ſince been informed that the Surikat bit a number of other perſons, and to which it ſeemed induced by ſome particular ſmell; for when laid hold of, it always curled up its noſe to ſmell the perſon, and obſervation was made that it never failed to bite thoſe whom he had bit before, however often they came near it, and this experiment was made by ſeveral people; to ſome perſons it ſeemed to have ſuch an averſion that it would uſe various ſtratagems to get at them, and if it could not bite their legs, it would lay hold of their ſhoes or petticoats.

M. Voſmaër ſays, in his work, "It is probable M. de Buffon was deceived both in reſpect to the name and native country of the Surikat, which was laſt ſummer ſent by M. Tulbagh to the Prince of Orange; for it belongs to Africa and not to America. This ſmall animal is not mentioned by Kolbe, and poſſibly was not known to him, for with a male and female tranſmitted to me I received the following note from the governor: *I ſend by the captain two ſmall animals, a male and female, of which I neither know their names nor the ſpecies to which they belong*; *they were brought from the remote deſarts and ſtony mountains of this country, and were the firſt we had ſeen. They are very gentle, and feed upon freſh meat either dreſſed or raw, eggs and ants.*"

I certainly do not mean to contend againſt the evidence of M. Tulbagh, or deny the juſtneſs of M. de Voſmaër's remark, for I had no other authority for the name and country of this animal, although I kept him a conſiderable time alive, than that of the man from whom I bought it, who ſaid he purchaſed it in Holland by the name of Surikat, and that it came from Surinam. But we are now certain it does not belong to South America, but to the mountains of Africa above the Cape of Good Hope; as to its name we are ſtill uninformed, but which can eaſily be changed whenever that in its native country can be procured.

THE TARSIER.

THE perſon who preſented us with this animal (*fig.* 167.) could neither inform us from whence it came, nor how it was called. It is remarkable for the exceſſive length of its hind legs. The bones of the feet, and eſpecially thoſe which compoſe the upper part of the *tarſus*, are of an extraordinary length, and it is from this diſtinctive character we have taken its name. The tarſier, however, is not the only animal whoſe hind feet are thus formed; the tarſus of the jerboa is ſtill longer, therefore the name of *tarſier*, which we have given to it muſt only be accepted as a precarious appellation, which ought to be laid aſide when the name it bears in its native country is known. The jerboa is found in Egypt, Barbary, and the Eaſt-Indies. At firſt I imagined the tarſier might belong to the ſame countries, from its reſemblance to that animal; they are both of the ſame ſize, which is not bigger than that of a middling rat; both have prodigious long tails furniſhed at their ends with long hairs; both have their hind legs exceſſively long, and thoſe before extremely ſhort; both have large eyes, and large erect ears; both have the lower part of their hind legs without any hair, while all the reſt of their body is covered with it. Theſe animals having thus in common ſuch ſingular characters, there ſeemed to be a probability of their being ſimilar ſpecies, or at leaſt two ſpecies produced in the ſame climate: nevertheleſs, in comparing them together, in other reſpects, it becomes not only doubtful, but we may preſume even the contrary. The tarſier has five toes to every foot, and may be ſaid to have four hands, for the toes are very long and ſufficiently divided; the largeſt of thoſe behind, or the thumb, are terminated by a flat nail; and although the nails of the other toes are pointed, they are ſo ſhort and ſo ſmall, they do not prevent the animal from uſing its four feet like hands. The jerboa, on the contrary, has only four toes and four long and crooked claws on its fore-feet, and inſtead of a thumb, it has only a tubercle without a nail. But what removes it farther from our tarſier, it has only three toes or three great claws on the hind feet. This difference is too great for animals whoſe ſpecies approach each other; and it is not impoſſible but they belong to diſtant climates; for the tarſier, by its ſmall ſize, four hands, long toes, little claws, and its long tail and feet, ſeems to have a much greater affinity with the Mexican and other opoſſums. But we mean only to mention our doubts, and ſhould be greatly obliged to thoſe who can indicate to us the real climate and name of this little animal.

THE PHALANGER.

TWO animals, a male and female, which were ſent to us by the name of *Surinam rats*, have much leſs affinity to rats, than with thoſe animals of which we have given the hiſtory under the names of the *marmoſe* and *cayopollin.* We have, therefore, rejected the denomination of Surinam rats, as complex and miſapplied. As it has never been mentioned by any naturaliſt or traveller, we have called it *phalanger, (fig.* 168.*)* from its *phalanges* being ſingularly formed, and becauſe the two firſt toes on the fore-feet are joined to each other to the end of the laſt phalanx, and are ſeparated only near the claws. The thumb is ſeparated from the other toes and has no claws: this laſt character, although remarkable, is not peculiar, for the Virginia and murine opoſſums have the ſame, but none of them have the *phalanges* faſtened together.

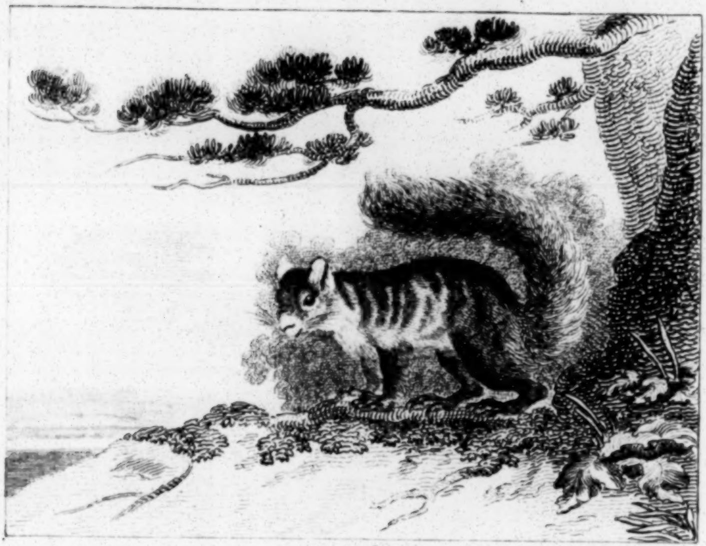

FIG. 169

Coquallin

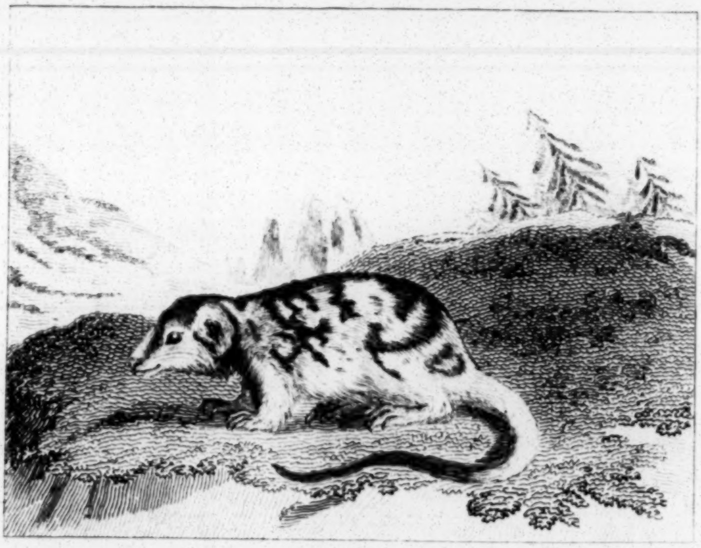

FIG. 168

Phalanger

Theſe animals vary in the colour * of the hair, they are about the ſize of a ſmall rabbit, or a very large rat, and are remarkable for the exceſſive length of their tail, ſnout, and the form of their teeth, which alone is ſufficient to diſtinguiſh them from the opoſſums, the rats, and every other ſpecies of animals with which it may be ſuppoſed to relate.

THE COQUALLIN.

I RECOGNIZED this animal, which was ſent me from America, by the name of the *orange-coloured ſquirrel*, to be the ſame as that which Fernandes calls *qualucallotquapachli*, or *coztiocotoquallin:* but as theſe Mexican words are very difficult to pronounce, I have abridged the laſt to *coquallin (fig. 169.)*. It is not a ſquirrel, although it greatly reſembles that animal both in figure and buſhineſs of the tail, for

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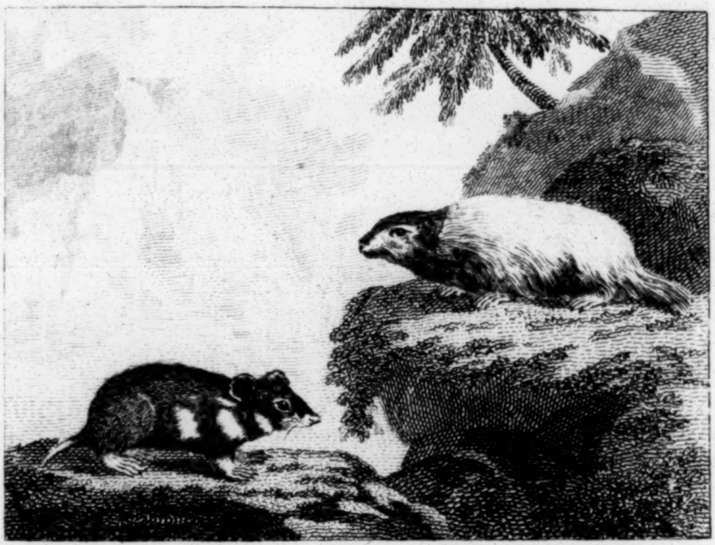
* The hair on the upper part of the body is reddiſh mixed with light aſh colour and yellow. The hind part of the head and middle of the back, are marked with a black line. The throat, belly, legs, and part of the tail, are of a dirty yellowiſh white. *Pendant's Synopſis.*

for it not only differs by many external characters, but alſo by its diſpoſition and manners.

The coquallin is much larger than the ſquirrel; *induplam fere creſcit magnitudinem*, ſays Fernandes. It is a pretty animal, and very remarkable for its colours; its belly is of a fine yellow, and its head as well as body variegated with white, black, brown and orange. It covers its back with its tail like the ſquirrel; but has not, like that animal, ſmall bruſhes of hair at the tips of the ears: he never climbs up trees, but dwells in holes under the roots of trees, like the ground ſquirrel, where it brings forth its young; it likewiſe ſtores up corn and fruit to feed on during the winter; it is a jealous and cunning animal, and ſo wild that it is impoſſible to be tamed.

The coquallin is only found in the ſouthern parts of America. The white and orange-coloured ſquirrels of the Eaſt Indies are much ſmaller, and their colours are uniform. Thoſe are true ſquirrels which dwell and produce their young on trees; but the coquallin, and the American ground ſquirrel, burrow under ground like rabbits, and have no other affinity to ſquirrels than their reſemblance in form.

Engraved for Barrs Buffon



170 FIG. 171

Hamster *Bobak*

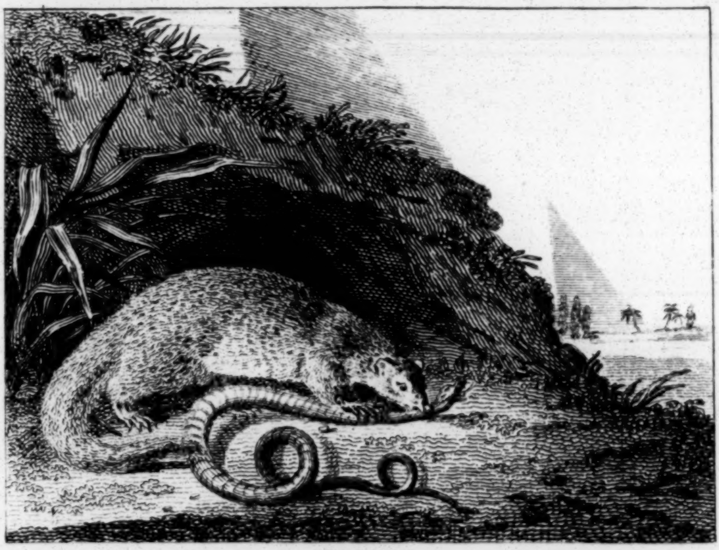


FIG. 172

Ichneumon

THE HAMSTER.

THE Hamſter (*fig.* 170.) is the moſt famous and the moſt deſtructive rat that exiſts. The reaſon we did not give its hiſtory among the other rats was the not, at that time, having been able to procure one of them; and we are now indebted for the knowledge we have acquired of it to the Marquis de Montmirail and M. de Waitz, who has ſent us two living hamſters with an inſtructive memoir on their manners and natural habits. We fed one of theſe animals for many months, for the purpoſe of examining it with attention, and afterwards diſſected it, in order to compare its internal ſtructure with that of other rats, and obſerved, that in its anterior parts it reſembled more the water rat than any other animal; it reſembled him alſo by the ſmallneſs of its eyes and the fineneſs of its ſkin; but its tail, inſtead of being long, is much ſhorter than that of the ſhort-tailed field mouſe, which, as we have already obſerved, greatly reſembles the water-rat in its internal conformation. All theſe animals live under the earth, and ſeem to be animated with the ſame inſtinct. They have nearly the ſame habits, and particularly that of collecting corn, &c. and making great magazines in their holes: we ſhall, therefore, dwell much leſs on the reſemblances of ſhape and diſpoſitions, than upon differences which diſtinguiſh the hamſter from all other rats and mice, and field-mice, we have already ſpoken of.

Agricola is the firſt author who has given preciſe and particular indications of this animal. Fabricius added ſeveral facts, but Schwenckfeld has done more than all the reſt; he diſſected the hamſter, and gave a deſcription of it, which nearly agrees with ours; notwithſtanding which he has not been quoted by the naturaliſts of a more modern date, who have been contented with copying Geſner; and yet it is but juſtice to that author to remark, his obſervations are ſo full and correct, that by ſubjoining thoſe of M. de Waitz we have whatever can be wiſhed for on the ſubject of this animal.

" The habitations of the hamſters are of different conſtructions, according to the ſex, age, and quality of the land. That of the male has an oblique paſſage, at the entrance of which is a quantity of earth thrown up. At a diſtance from the entrance there is a hole which deſcends perpendicularly into the chambers, or cavities of the habitation. There is no hillock of earth near this hole, which makes it probable that the oblique entrance is made hollow from the outſide, and that the perpendicular hole is worked within ſide from the bottom to the top.

" The habitation of the female has alſo an oblique paſſage, with two, three, and even eight perpendicular holes, by which the young ones may come in and go out. The male and female have each a ſeparate abode, and the female's is deeper than that of the male.

" Both male and female burrow in the earth, at one or two feet diſtance from the perpendicular holes; and according to their age, and in proportion as they multiply, they form one, two, or three particular cavities, in form of vaults, as well above as below, and which are more or leſs ſpacious, according to the quantity of their proviſions.

" The perpendicular hole is the common paſſage, and by the oblique one they throw out the earth they ſcratch up. This paſſage alſo has a gentle declivity into ſome of the cavities, and a more ſteep one in others, which ſerves for a free circulation of air in their ſubterraneous habitations. The cavity where the female brings forth her young contains no proviſion, but is only a neſt formed of ſtraw and herbs. The depth of the cavities is very different. The young hamſter in his firſt year makes its burrow only a foot deep, while the old animals often dig to the depth of four or five feet: all the cavities communicate together in one habitation, and which is ſometimes from eight to ten feet diameter.

“ Theſe animals ſtore their magazines with dry clover, corn in the ear, and beans and peaſe in their pods; having ſeparated they carry out the huſks and pods by the oblique paſſage. They commonly begin to get in their winter ſtore about the end of Auguſt, and which they convey to their habitations in a pouch they have in their cheeks.

“ When the hamſter has filled his magazines he covers them over, and carefully ſhuts all the avenues to them with earth: this precaution renders the diſcovery of theſe animals very difficult, and the heaps of earth which they throw up before the oblique paſſage are the only marks to trace their habitations. The moſt uſual method of taking theſe animals is by digging them out of their holes, which is attended with much trouble, by reaſon of the depth and extent of their burrows. However, a man verſed in this buſineſs commonly effects his purpoſe with good ſucceſs and profit, for in autumn he ſeldom fails of finding two buſhels of good corn in each habitation, and the fur of theſe animals is valuable. The hamſters bring forth two or three times in a year, and ſeldom leſs than five or ſix. Some years there are great numbers of them to be ſeen, and in others ſcarcely any to be met with. They multiply conſiderably when the ſeaſons are wet, which cauſes a great ſcarcity of grain by the immenſe devaſtations they make.

" The hamſter begins to burrow at the age of ſix weeks or two months ; but they never copulate in the firſt year.

" The pole-cat is a great enemy to the hamſters, which he deſtroys in great numbers, and even takes poſſeſſion of their holes.

" The back of the hamſter is commonly brown, and the belly white ; there are ſome, however, of a grey colour, and this difference may proceed from their age ; beſides theſe, others are met with entirely black."

The hamſters deſtroy each other like field-mice ; two of them being put into the ſame cage the female killed the male in the night, and having divided the muſcles that held the jaws together, ſhe devoured great part of his viſcera. There are great numbers produced in one year, and are ſo deſtructive that in ſome parts of Germany a reward is fixed on their heads. They are indeed ſo numerous there that their fur is an important article of commerce.

All theſe circumſtances, which we have extracted from the Memoir of M. de Waitz, and the obſervations of M. de Montmirail, appear to be true, and agree with what we have learnt from other quarters on this ſubject; but it is not ſo certain, as mentioned in the ſame Memoir, that theſe animals are dormant the whole winter, and recover in ſpring. The hamſter, which we kept during the winter of 1762-3, in a chamber without any fire, and where the cold was intenſe enough to freeze water, did not become torpid, but moved about, and eat as in common; while the dormice we had alive were benumbed with a much leſs degree of cold. Therefore the hamſter has not any affinity with the marmot or dormice in this reſpect; and it is very improperly denominated the *Straſbourgh marmot* by ſome of our naturaliſts, ſince it does not ſleep like the marmot, and is not to be found in the vicinity of Straſbourgh.

SUPPLEMENT.

IN an extract from a German publication of M. Sulzer, which appeared in the Gazette de Littérature of the 13th of September, 1774, we find many additional obſervations reſpecting the hamſter. As a proof of its multiplicity in Germany an inſtance is given, that in one year was taken to the town-houſe at Gotha, 11,574 ſkins, in another 54,429, and in a third 80,139. It is alſo there ſtated, that the male is a courageous animal, and will defend himſelf againſt the attacks of either dogs, cats, or men; that he is naturally of a moroſe diſpoſition, agrees not with his own ſpecies, and will even at times deſtroy his own family; he devours mice, birds, or any animal that he can overcome, and he drinks very little. In the winter they retire into their holes, where the female remains much longer than the males; ſhe goes four weeks with young, and generally has ſix at a litter. When in a torpid ſtate they do not appear to reſpire, or have the ſmalleſt degree of feeling. On opening the cheſt, however, the heart is perceived to beat at the rate of fifteen times in a minute, whereas, when in full ſpirits, and ſomewhat irritated, it has been known to beat 180 times in the ſame ſpace; when in this ſtate, which he is never reduced to in the open air, an electrical ſhock will not rouſe him.

From the fact which we formerly ſtated, namely, that the hamſter we kept confined in a cage, and in a room where water was frozen, was not reduced to a torpid ſtate, we cannot but regret M. Sulzer has not ſtated the degree of cold, or want of air, which rendered them ſo. M. Allemand has confirmed this fact in the obſervations he has added to the hamſter in the Dutch edition of my work. Among other remarks, he ſays, this animal is of the mouſe kind, and ſleeps during winter, like the marmot; he is of a very forbidding external appearance, and his manners are not leſs diſguſting; for he has not a ſingle ſocial quality; for he deſtroys and devours every animal he can conquer, not excepting his own ſpecies; and even the females, to whom he is led by inſtinct, would ſuffer no better fate, after the gratification of his paſſions, which are of ſhort duration, if ſhe did not contrive her eſcape, or ſecure her own life by the killing of him firſt.

Theſe animals paſs the winter in a torpid ſtate, and are the only ones of Europe which have pouches in their cheeks. They avoid extremes, and are not to be found either in very warm or very cold countries. As he feeds upon grain, and dwells under the earth, it is neceſſary for the conſtruction of his habitation that the ſoil ſhould neither be hard, ſandy, or marſhy, but one that is eaſily penetrated, and yet ſo firm as not to crumble down ; and it is for this reaſon that the hamſters are more numerous in Thuringia than in any other place, where alſo they have the no leſs great advantage of procuring all kinds of grain with eaſe, it being an article with which that country abounds.

The hamſters come in ſeaſon about the end of April, when the males ſeek out the females, which always have ſeparate habitations, but do not remain with them above a few days. If two males meet in the ſame hole they inſtantly attack each other, and never give over until one has laid the other dead at his feet. The victor of courſe takes poſſeſſion of the female, and during their amours, which laſt but a very few days, they lay aſide that ferocity with which at other times they conſtantly perſecute each other ; nay, they will at this time act for their mutual defence, and if their hole happens to be opened, and the female perceives the male in danger, ſhe will fly at their diſturber, and inflict deep and painful wounds. The females bring forth two or three times every year, they ſeldom have leſs than ſix young, and more frequently from ſixteen to eighteen ; they grow very faſt, for they begin to dig the earth when they are fifteen days old, and are entirely thrown off by their mother by then they are three weeks. They have little attachment to their offspring, for if their habitations are attacked the mother's only ſolicitude is to take care of herſelf; for which ſhe penetrates deeper into the earth, and is ſo regardleſs of the cries of her young that ſhe even blocks up the hole after her to prevent their following.

They feed on all kinds of herbs, roots, grains, and the fleſh of thoſe animals they can ſubdue. They begin to ſtock their magazines with ſuch proviſions, and as the harveſt is got in they go to greater diſtances, carrying back with them every thing they can meet with, without diſtinction ; and for this purpoſe Nature has beſtowed on them a pouch in each cheek, the outſides of which are ſmooth and membraneous, and the inſides are furniſhed with a number of glands, which ſupply a fluid, and keep them ſo flexible that they receive no injury from any kinds of grain they may wiſh to convey, however rough or ſharp. In each of theſe pouches he can carry an ounce and a half of grain, and which he empties by preſſing his fore-feet againſt his cheeks. When a hamſter is met thus loaded he may be taken with the hand, becauſe at that time he cannot bite; but if he is not laid hold of inſtantly he ſoon empties his pouches, and will defend himſelf. An old male will collect a great quantity of grain in this manner, and there have been inſtances of finding 100 pounds weight in a ſingle hole; but the females and the young ones do not ſtore ſo much.

As ſoon as winter begins to commence they retire into their ſubterraneous habitations, and carefully cloſe up all the holes; here they live at perfect eaſe, having laid up plenty of proviſions until the froſt comes on, when they ſink into a torpid ſtate. If their holes are opened at this time, the animal is found lying upon a bed of ſoft ſtraw, with his head bent between his two fore-legs under his belly, and his hind feet turned up and reſting on his noſe; his eyes are quite ſhut, and if forced open they cloſe again immediately; in a word, he has every appearance of a dead animal, and his whole body feels as cold as ice. This torpid ſtate of the hamſter has been attributed to a certain degree of cold; but although that may be the caſe with bats and dormice, yet it is neceſſary with this animal that he ſhould alſo be deprived of the impreſſion of the air; for if he is ſhut up in a cage, and put in a room where water will freeze, he will not become torpid; but if that cage is buried ſome feet under the earth, and ſo covered that the air cannot penetrate to him, he will in the courſe of a few days become equally ſo as if he was in an habitation of his own framing. The cage being brought up the animal ſoon recovers in the air, and if put under the earth he ſinks again into his torpid ſtate; and this he will continue to do as long as there is any froſt. The ſame circumſtance takes place if they are dug out of their holes during their torpor, after being a few hours expoſed to the air, they invariably awake, whether it is night or day, which proves that light is not part of the cauſe. In recovering from his torpid ſtate the limbs of the hamſter firſt begin to loſe their ſtiffneſs, he then breathes, but at long intervals; by degrees opens his mouth and eyes; at length he endeavours to get upon his legs, and continues his efforts until he has accompliſhed that point; when after ſtanding perfectly ſtill for a few moments, he begins to walk and go about as uſual.

This animal ſeems to be influenced by no other paſſions but rage, for he invariably makes war againſt all that come in his way, regardleſs of their ſuperiority in ſize or ſtrength. He has no idea of flight, and will ſuffer himſelf to be beat to pieces rather than yield. When he ſees a dog coming towards him, he empties his cheeks, if he happens to be loaded, then ſwells them up to an enormous ſize, waits the approach of his enemy, who being ſufficiently near he raiſes upon his hind legs, and darts furiouſly upon him; and if he once makes good his hold he never quits it without the loſs of life; but the dogs, who are fond of hunting them, generally avoid the firſt attack, and then ſeize them by the back. His ferocious diſpoſition is not only exerciſed againſt other animals, but even his own ſpecies, for two hamſters never meet but they attack each other, and fight till one is ſlain, whom the conqueror devours; and in this reſpect there is no difference even if the rencounter is between a male and female.

THE BOBAK, AND OTHER MARMOTS.

THE name of the *Straſbourgh marmot* has been affixed to the hamſter, and that of the *Poland marmot* to the Bobak (*fig.* 171.). But it is as certain, that the hamſter is not a marmot, as it is probable, the bobak belongs to that ſpecies, ſince he only differs from the marmot of the Alps by the colour of his hair, which inſtead of being brown is rather a pale yellow; he has alſo a thumb, or claw, to the fore-feet, while the marmot has only four toes and no thumb; but in every other reſpect they perfectly reſemble, which makes us preſume they do not form two diſtinct ſpecies. It is the ſame with reſpect to the monax, or Canadian marmot, which ſome travellers have termed the *whiſtler*: he only ſeems to differ from the marmot by the tail, which is thicker of hair. Therefore the Canadian monax, the Poland bobak, and the Alpine marmot, appear to be all the ſame animal, which from the influence of different climates have undergone thoſe alterations we have before particularized. As this ſpecies prefers the coldeſt and higheſt mountains, and inhabits Poland, Ruſſia, and other partsof the north of Europe, no wonder it is found in Canada, where it is only ſomewhat leſs, a circumſtance not particular to it alone; for all animals common to both continents are ſmaller in the new than in the old.

The Siberian animal, called by the Ruſſians *jevraſchka*, is a kind of marmot, ſtill leſs than the Canadian monax, the head of which is round, and the ſnout ſnubbed. It has no external ears, nor can the auditory paſſages be ſeen without turning back the hair. The length of the body, including the head, is not above a foot; the tail, which is ſcarcely three inches long, is nearly round towards the body, then flat, and truncated towards its extremity. The body is thick, the hair yellow, mixed with grey, and blackiſh towards the end of the tail. The legs are ſhort, but thoſe before are ſomewhat longer than thoſe behind. The hind-feet have five toes, with five black claws, a little crooked: the fore-feet have but four. When theſe animals are irritated, or when they are ſurpriſed, they bite violently, and make a ſhrill noiſe like the marmot. They ſit upon their hind legs to feed, and carry the food to their mouths with their fore-paws. They copulate in ſpring, and bring forth in ſummer; commonly five or ſix at a time. They dig burrows for their winter reſidence, and the females ſuckle their young at the bottom of their habitations. Though theſe animals bear a great reſemblance to the marmots, they nevertheleſs ſeem to be a different ſpecies, for the Poland, or Alpine ſpecies of marmot, are found in the ſame parts of Siberia, which the inhabitants call *ſuroks*, and theſe two ſpecies have never been obſerved to mix together, nor produce an intermediate race.

THE JERBOA.

JERBOA is a generic name, which is made uſe of to denote thoſe remarkable animals whoſe legs are extremely diſproportionate; thoſe before being not above one inch long, and thoſe behind two inches one fourth, exactly reſembling thoſe of a bird. There are four diſtinct, ſpecies, or varieties, in this genus; firſt, the *tarſier*, which we have already ſpoken of, and which is certainly a particular ſpecies, having five toes on each foot, like thoſe of a monkey. Secondly, the *jerboa*, which has four toes on the fore-feet, and three on thoſe behind. Third, the *alagtaga*, whoſe feet are formed like thoſe of the jerboa, with this difference, that it has five toes on the fore-feet, and three on the hind, with a ſpur, that may be conſidered as a thumb, or fourth toe, much ſhorter than the others. Fourth, the *daman Iſrael*, or *lamb of Iſrael*, which has four toes to the fore-feet, and five on thoſe behind, and which may poſſibly be the ſame animal that Linnæus has deſcribed under the name of *mus longipes*.

The head of the jerboa is ſloped ſomewhat in the manner of a rabbit; but the eyes are larger, and the ears ſhorter, higher, and broader in proportion to its ſize. Its noſe is of a fleſh colour, and its muzzle ſhort and thick, the orifice of the mouth very narrow, the upper jaw very broad, and the lower narrow and ſhort, the teeth are like thoſe of a rabbit; the whiſkers are compoſed of long black and white hairs; the fore-feet are very ſhort, and never touch the ground, they are furniſhed with four claws, and only uſed hands to carry the food to the mouth; the hind-feet have but three toes, the middle one is longeſt, and all of them have claws; the tail is three times longer than the body, and is covered with ſhort ſtubborn hair, of the ſame colour as thoſe on the back, but tufted at the end with longer and ſofter hair; the legs, noſe, and ears, are bare, and of a fleſh colour; the upper part of the head and back are covered with reddiſh hair; the ſides, throat, and belly, are whitiſh; below the reins, and near the tail, there is a large black tranſverſal band, in the form of a creſcent.

The alagtata is ſmaller than a rabbit, its body is ſhorter, its ears are long, wide, bare, thin, tranſparent, and ſprinkled with ſanguinary veſſels; the upper jaw is much larger than the lower, but blunt and pretty wide at the extremity; the whiſkers are large; the teeth are like thoſe of the rat, the eyes full, with the iris and pupil of a brown colour. The body of this animal is narrow before, but very broad and round behind; the tail is very long, it is not ſo thick as the little finger of a man, and about two-thirds of it is covered with ſhort and rough hair, which grows longer, ſofter, and thicker, towards the end, till at length it forms a kind of tuſt, black at the beginning. and white towards the extremity. The fore-feet are very ſhort, and have five toes, the hind ones, which are very long, have only four, three of which are placed forwards, and the fourth, which is a kind of thumb, ſtands at about an inch diſtant from the reſt. All theſe toes are furniſhed with claws, ſhorter in the fore than in the hind-feet. The hair of this animal is ſoft, pretty long, yellow on the back, and whitiſh under the belly.

By comparing theſe two deſcriptions, the firſt of which is taken from Edwards and Haſſelquiſt, and the ſecond from Gmelin, we ſhall perceive, that theſe animals reſemble each other as much as poſſible. The jerboa is only ſmaller than the alagtaga, and has only four toes on the fore-feet, and three on the hind ones, without any ſpur; while the other has five on the fore-feet, and three and a ſpur on thoſe behind; but I am inclined to think this difference is not univerſal, for Dr. Shaw, who has given a deſcription of the jerboa of Barbary, repreſents it with this ſpur, or fourth toe, on the hind-feet; and Mr. Edwards remarks, that he carefully examined two jerboas he ſaw in England, and that he ſaw no ſpur in either of them. Thus, this character, which would ſpecifically diſtinguiſh the jerboa from the alagtaga, not being univerſal, is of no conſequence, and rather remarks the identity, than the diverſity of the ſpecies. Neither is the difference of ſize any greater proof of their being two different ſpecies; poſſibly Edwards and Haſſelquiſt have only deſcribed young jerboas, and M. Gmelin an old alagtaga. Some doubt, however, muſt ſtill remain from the difference in the ſize of their tails, and the variety in the climates they inhabit, for the jerboa is common in Circaſſia, Egypt, Barbary, and Arabia; and the alagtaga, in Tartary, along the Wolga, and as far as Siberia. It is ſeldom that the ſame kind of animal inhabits ſuch different climates; and whenever it does happen the ſpecies undergoes great changes; which, we preſume, is the caſe with the jerboa, of which the alagtaga, notwithſtanding theſe differences, ſeems to be only a variety.

Theſe animals commonly conceal their hands, or fore-feet, among their hair; ſo that at firſt they appear to have only hind-feet. When they move from one place to another, they do not walk, that is, advance one foot before the other, but jump or bound with the greateſt caſe, four or five feet at a time; they reſt themſelves in a kneeling poſture, and only ſleep in the day. In the night they ſeek for food, like hares, and like them, feed on graſs and all kinds of grain. They are of a gentle nature, but are not to be tamed beyond a certain limit. They burrow like rabbits, and in much leſs time. They lay up a ſtore of graſs towards the end of ſummer in their habitations, and in which, in cold countries, they remain during the winter.

With reſpect to the daman, or lamb of Iſrael, which ſeems to be of the jerboa kind, as its fore-legs are much ſhorter than thoſe behind, having never ſeen it, we cannot do better than copy the deſcription given by Dr. Shaw, who ſpeaks of theſe two animals as of different kinds: "The daman, (ſays this author) is alſo a native of Mount Lybia, and common to be met with in Syria and Phœnicia; it is a very harmleſs animal, reſembling the common rabbit in ſize, ſhape, and alſo in the diſpoſition of the fore-teeth; but it is ſomewhat browner, has ſmaller eyes, and a head more pointed. Its fore-feet are ſhort, and thoſe behind long, much in the ſame proportion as thoſe of the jerboa. Although it ſometimes conceals itſelf in the earth, its common retreat is in the hollows and clefts of rocks, which is a ſtrong reaſon to conclude that it is rather this animal than the jerboa, which is the *ſaphan*, mentioned in ſcripture. I have not been able to learn from any one why it was called the daman of Iſrael, which ſignifies the lamb of Iſrael." Proſper Alpinus, who mentioned this animal before Dr. Shaw, ſays, that its fleſh is delicate food, and that it is much bigger than the European rabbit; but this laſt circumſtance ſeems doubtful, for Dr. Shaw has omitted this paſſage of Proſper Alpinus, whom, in other reſpects, he has fully quoted.

THE ICHNEUMON.

THIS animal in Egypt is called *mangutia*, but we ſhall adopt the name given it by Ariſtotle, and others, of the *ichneumon*, *(fig.* 172.*)* is as domeſtic in Egypt, as the cat is in Europe; and is alike ſerviceable to deſtroy rats and mice. But its inclination for prey is much ſtronger and more violent, for it hunts and eats with the ſame avidity, birds, quadrupeds, ſerpents, lizards, and inſects. It attacks every living creature, and feeds entirely on animal fleſh; its courage is equal to the ſharpneſs of its appetite, being neither intimidated by the anger of the dog, nor the malice of the cat; it even dreads not the bite of the ſerpent, but purſues, ſeizes, and kills them, however venomous. As ſoon as it begins to feel the effects of their venom, it immediately goes in ſearch of antidotes, and particularly of a root which the Indians call by its name, and which, they ſay, is one of the moſt ſure and powerful remedies againſt the bite of the viper or aſp. It ſucks the eggs of the crocodile, as well as thoſe of fowls and birds; it alſo kills and eats the young crocodiles, though they are very ſtrong even when ſcarcely come out of the ſhell; and as fable commonly precedes truth, it has been alledged that, in conſequence of this antipathy, the ichneumon enters the body of the crocodile when he is aſleep, and never quits him till it has devoured his entrails.

Naturaliſts have ſuppoſed there are ſeveral kinds of ichneumons, becauſe there are ſome larger, and of a different colour than others; buts if we conſider, that being often reared in houſes, they muſt, like other domeſtic animals, undergo changes, we ſhall readily perceive that this diverſity of colour and ſize only indicates ſimple varieties, not ſufficient to conſtitute a ſeparate ſpecies; eſpecially as in the two ichneumons which I have ſeen alive, and in many ſtuffed ſkins I examined, I did not obſerve that the intermediate ſhades both of ſize and colour differed from the reſt by any evident and conſtant character; and it only appears, that in Egypt, where the ichneumons may be ſaid to be domeſtic, they are larger than thoſe in India, where they are wild.

Nomenclators, who are never willing that one being ſhould be only what it is, have greatly varied on the ſubject of the ichneumon. Linnæus firſt made it of the badger kind, and directly after of the ferret. Haſſelquiſt, following the leſſons of his maſter, alſo makes it a badger. Klein and Briſſon have placed it in the weaſel claſs, others in the otter, and ſome with the rat. I only quote theſe ideas to ſhew the want of conſiſtency, and contradictions, which are to be met with in what are called generic denominations, and which are generally falſe, arbitrary, vague, and equivocal.

The ichneumon is fond of living by the ſides of rivers. During inundations it quits its habitation, and even ſeeks for prey near habitable places. They walk without making any noiſe, and change their manner as occaſion requires. Sometimes they carry their heads erect, foreſhorten their bodies, and raiſe upon their hind-legs ; at other times they creep and lengthen their bodies like a ſerpent. It often ſits upon its hind legs, and more often ſprings with amazing ſwiftneſs upon its prey ; its eyes are lively and full of fire ; its phyſiognomy is beautiful, its body very agile, legs ſhort, tail thick and very long, and its hair rough, and ſometimes curled. Both male and female have a remarkable orifice, independent of the natural paſſages ; a kind of pouch, in which an odoriferous liquor is ſecreted ; and ſome have aſſerted that the ichneumon opens this pouch to refreſh itſelf when too hot. Its noſe is very ſharp, and its mouth narrow, which prevents it from ſeizing any thing very large ; but theſe wants are amply ſupplied by agility and courage. It very eaſily ſtrangles a cat, though bigger and ſtronger than itſelf ; it often fights with dogs, and however large commonly gets the better of them.

Their growth is very quick, and their lives but of ſhort duration : they are very common throughout all the ſouthern parts of Aſia, from Egypt to Java ; and are even to be met with in Africa, as far as the Cape of Good Hope ; but they will not live and produce in our temperate climates ; they are diſtreſſed by wind, and the froſt deſtroys them ; to avoid the one, and to counteract the effects of the other by warmth, they roll themſelves up with their heads under their bellies. The ichneumon was much eſteemed by the ancient Egyptians, and is ſtill protected with much care upon account of the eſſential ſervice it performs in the deſtruction of noxious animals, particularly the crocodiles, whoſe eggs it knows how to diſcover, even in the ſand, and which creatures would become very formidable, from their great multiplication, one female laying near five hundred eggs, if it was not for the ichneumons deſtroying of them.

THE FOSSANE.

THIS animal is called by ſome travellers the *genet of Madagaſcar*, becauſe it reſembles the genet in colour, and ſome other affinities; but it is in general much ſmaller, and has not the odoriferous bag, which is an eſſential character belonging to that animal. As we were not certain as to this fact, not being able to procure one for diſſection, we wrote to M. de Poivre, de Poivre, who had ſent us the ſkin of a foſſane ſtuffed, and who favoured us with the following anſwer:—Lyons, July 19, 1761. "The foſſane which I brought from Madagaſcar is an animal whoſe manners are much like thoſe of our martin. The inhabitants of the iſland aſſured me, that when the male is in heat it emits a very ſtrong ſmell like muſk. When I ſtuffed the ſkin in the royal gardens I did not diſcover any bag, nor did I find any odoriferous ſmell. I reared two ſimilar animals, the one at Cochinchina, and another in the Phillippine Iſlands; they were both males; I had them very young, and kept them about two or three months, in which time they had become pretty familiar. I never found any bag in the parts you ſpeak of, but only obſerved, that their excrements had the ſame ſmell as thoſe of our martin. They eat fleſh and fruits, but preferred the latter, and were exceedingly partial to bananas. This is a very wild animal, and difficult to tame; though taken when very young yet it preſerved the look and character of ferocity, which appeared to me ſomewhat extraordinary in an animal who feeds by preference on fruits. The eye of the foſſane repreſents a large black globe, in compariſon with the ſize of its head, which gives it a miſchievous aſpect."

It gives us great pleaſure to have here an opportunity of teſtifying our thanks to M. de Poivre, who, from a real taſte for natural hiſtory, and a friendſhip for thoſe who cultivate it, has preſented to the cabinet a great number of ſcarce and curious animals.

The animal called *berbē* in Guinea ſeems to us to be the ſame as the foſſane, and conſequently that this ſpecies exiſts in Africa as well as in Aſia. "The *berbē* (ſays Boſman) has a more pointed ſnout, and a ſmaller body, than our cat, and is ſpeckled like the civet." We know of no animal with which theſe characters ſo well agree as with that of the foſſane.

THE VANSIRE.

THOSE who have ſpoken of this animal have taken it for a ferret, to which indeed it has a great reſemblance; but it differs by characters ſufficiently ſtrong to warrant our conſidering it a diſtinct ſpecies. The vanſire, or, as it is called by ſome, the Madagaſcar weaſel, of which place it is a native, has twelve grinders in its upper jaw, while the ferret has only eight; and the lower grinders, though ten in number in both animals, are neither alike in ſhape nor ſituation. Beſides, the vanſire differs by the colour of its hair from all ferrets, though thoſe, like every other animal man is careful of rearing and increaſing, vary ſo much in colour, that there is a difference even between male and female.

To us it appears, that the animal mentioned by Seba as the *weaſel of Java*, and which, he ſays, the natives call *koger-angan*, and afterwards ſpoken of by Briſſon by the name of the *ferret of Java*, may poſſibly be the ſame animal as the vanſire, at leaſt it comes nearer to the vanſire than to any animal at preſent known; but Seba's deſcription is not ſufficiently complete to eſtabliſh a juſt compariſon, which is abſolutely neceſſary to form a ſolid and explicit judgment.

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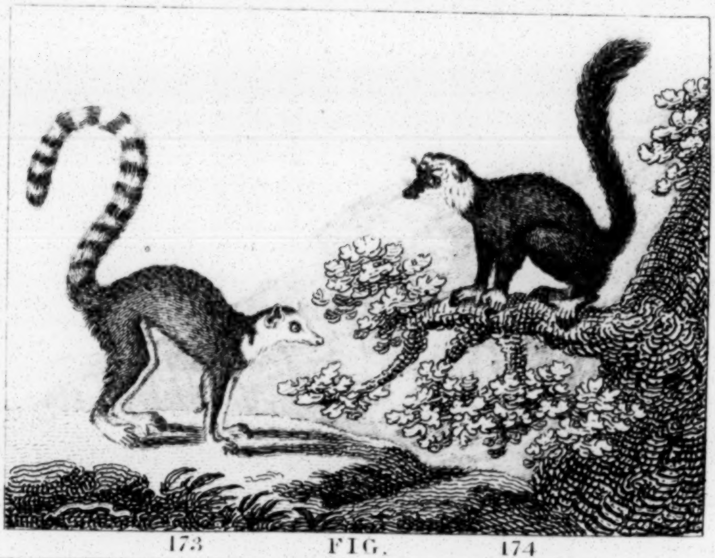
THE MAKI.

AS this name Maki has been given to ſeveral animals we can only uſe it as a generic term, under which we comprehend three animals of the ſame claſs, but vary by characters ſufficiently numerous to conſtitute different ſpecies. Theſe three animals have long tails, and feet ſhaped like thoſe of the monkey; but their ſnout is long, like that of the martin; and they have ſix inciſive teeth in the under jaw, while the monkies have but four.

The firſt of this kind is the mococo, or maucauco, (*fig.* 173.) commonly known by the name of the *ring-tailed maki*. The ſecond is the mongous, (*fig.* 174.) commonly called the *brown maki*; but this denomination is miſapplied, for there are among this kind various colours, ſome are all brown, others with white cheeks and feet, and ſtill others whoſe cheeks are black and feet are yellow. The third is the *vari*, (*fig.* 175.) called by ſome the *pied maki*: but this denomination has been alſo miſapplied, for beſides thoſe which are pied, that



173 FIG. 174

Macauco *Mongous*

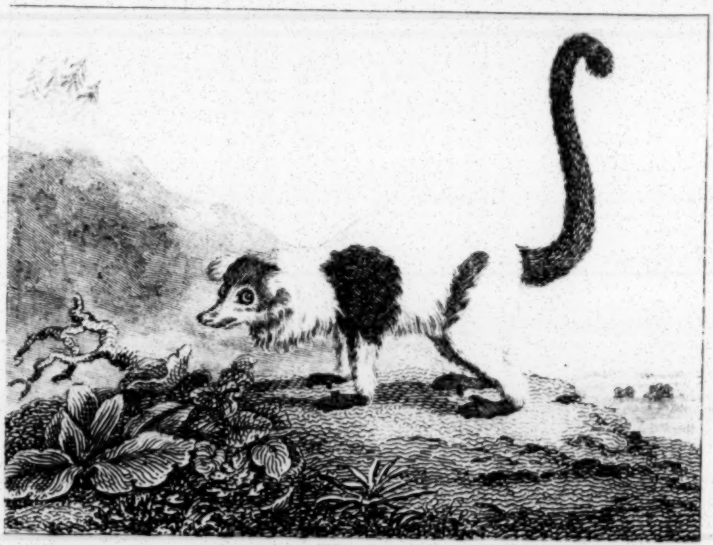


FIG. 175

Vari

that is black and white, there are ſome all white, and others entirely black. Theſe animals are all natives of the eaſtern parts of Africa, and principally of Madagaſcar, where they are found in great numbers.

The maucauco is a beautiful animal; he is remarkable for the largeneſs of his eyes, and the length of the hind legs, which by far exceed thoſe before, and for his long and handſome tail which is continually elevated, and in motion, and upon which are thirty rings alternately black and white, all very diſtinct and ſeparate from each other. He is of a gentle diſpoſition, and although he greatly reſembles the monkies in many particulars, he has not any of their malicious diſpoſitions. When in a ſtate of liberty, they are frequently ſeen at Madagaſcar in companies of thirty or forty together. This animal is neither miſchievous nor ferocious; but as he is always in motion, it is cuſtomary to keep him chained when in a ſtate of captivity, for he may be rendered ſo tame as to be let looſe without any danger of his quitting his maſter. When he moves, it is in an oblique direction, like all animals which have hands inſtead of feet. He jumps with greater facility than he walks, and is ſo ſilent an animal, that his voice is ſeldom heard, except when irritated, and then he utters a ſharp, but very ſhort cry. He ſleeps in a ſitting poſture, with his muzzle reſting on his breaſt. His body is not thicker than that of a cat, but it is longer, and he appears to be larger than he really is from the length of his legs. His hair is very ſoft, although it ſtands almoſt upright. The genital parts of the male maucauco are ſmall and concealed, while thoſe of the mongous are diſproportionally large and apparent.

The mongous is leſs than the maucauco, but his hair is likewiſe ſhort, ſilky, and a little curled. His noſe is thicker, and reſembles that of the vari. I had a mongous in my poſſeſſion for ſeveral years; his coat was brown, his eyes yellow, his noſe black, and his ears ſhort. He had a cuſtom of playing with, and biting his own tail, and by this method deſtroyed four or five of the laſt vertebræ. He was very ſlovenly, and ſo troubleſome that we were obliged to keep him chained. Whenever he got looſe, he viſited the ſhops in the neighbourhood, and would make free with fruit, ſugar, ſweetmeats, &c. and to obtain which, he would open the boxes that contained them. At ſuch times it was difficult to retake him, and he would bite even thoſe he beſt knew. He was almoſt continually grumbling, and when weary of being alone, he made a loud noiſe which ſomewhat reſembled the croaking of a frog. This was a male animal, and had extremely large teſticles for the ſize of his body. He was fond of ſhe-cats, but his connection with them was too ſlight to be productive. He was very fearful of the cold and wet, and never ſtirred far from the fire-ſide, where he ſat upright to warm himſelf. He was fed with bread and fruits; his tongue was rough, like that of a cat, and he would lick a perſon's hand until it became inflamed, and if not guarded againſt would generally end with a bite. He died with the cold in the winter, 1750, altho' he never ſtirred from the fire-ſide. He was very briſk in his motions, and ſometimes petulant. He often ſlept in the day, or rather dozed, for his ſleep was ſo light, that he was diſturbed with the leaſt noiſe.

There are many varieties of the mongous both in colour and ſize. This we have juſt been mentioning was quite brown, and about the ſize of a middling cat. We ſaw one which, though adult, was not bigger than the loir. If this ſmall mongous had not perfectly reſembled the great one in every reſpect but in ſize, it would certainly have been a different ſpecies; but the reſemblance was ſo perfect, that we think ourſelves juſtifiable in ranking them together.

The *vari* is much larger, ſtronger, and wilder, than the maucauco, and is even dangerous in its free ſtate. Travellers tell us, " that theſe animals are as furious as tigers, and very difficult to be tamed ; and that their voice is ſo very loud, that when there are only two together in the woods, it might be imagined the noiſe proceeded from an hundred." The voice of the vari is ſomewhat like the roaring of the lion, and is very alarming to thoſe who hear it for the firſt time. This aſtoniſhing power of voice in an animal of ſo middling a ſize, depends on the ſingular ſtructure of the windpipe, the two branches of which enlarge and form a concavity near its entrance into the tubes of the lungs. Thus he differs greatly from the maucauco both by nature and conformation. His hair in general is much longer, and he has a kind of ruff round the neck, conſiſting of very long hair, which forms a very apparent character, and by which he may eaſily be diſtinguiſhed. In colour he varies from quite black to white, and his hair, tho' very long and ſoft, ſtands nearly upright. His muzzle is thicker and longer than that of the maucauco. His ears are much ſhorter, and edged with long hairs ; and his eyes are of ſo deep an orange-colour, that they appear to be red.

The maucauco, the mongous, and the vari, are all of the ſame country ; and ſeem to be confined to Madagaſcar, Mozambique, and the neighbouring lands of thoſe iſlands. It does not appear, by the teſtimony of any traveller, that they are to be found in any other part of the world ; and ſeem to be in the Old Continent, what the opoſſums are in the New. In reſpect to ſhape, the makis ſeem to fill up the ſhade between the long-tailed monkey, and lower orders of quadrupeds ; for they have four hands and a long tail like monkies, and at the ſame time, have a long muzzle like foxes and pole-cats. In their manners, the makis, however, partake more of the monkey, for altho' they ſometimes feed upon fleſh, and take pains to ſeize on birds, they are leſs carnivorous than frugivorous ; and even in a domeſtic ſtate they prefer the roots, fruit, and bread, to fleſh, raw or roaſted.

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